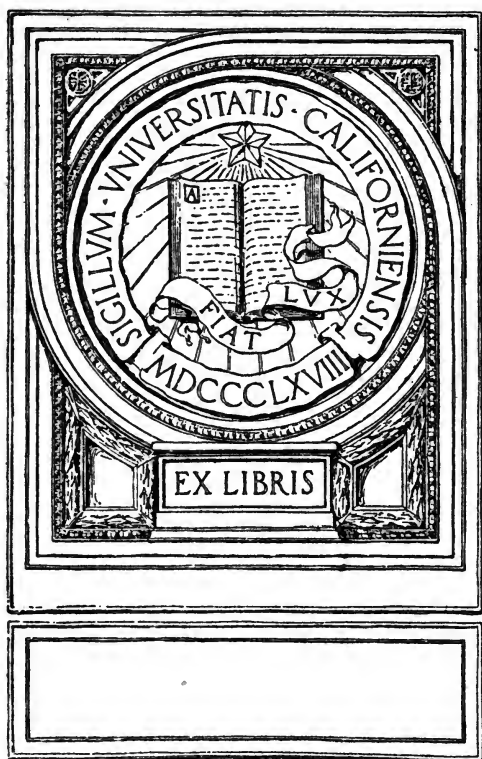


# FIRE INSURANCE





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# FIRE INSURANCE

## THE ESSENTIALS OF THE FIRE INSURANCE BUSINESS

BY

EDWARD AUGUSTUS KETCHAM

Chief Examiner Insurance Department of Wisconsin

MADISON, WISCONSIN

1916

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This book is primarily an attempt to place in convenient form the essential elements relating to the fire insurance business. It is a subject that is still in a transition state. The changes in fire insurance business in the last quarter of a century, especially since 1900, have been very rapid. Old ideas in regard to subject are passing away and are being replaced by new ones. Beliefs which were thought to be fixed are now considered to be in an incipient stage. While there are many excellent works on the subject and more being produced year by year, still we do not know of any production which brings the subject, whole, down to date. The author has endeavored to gather up the fragments of information relating to the business of insurance and tried to present them to the student in a readable form. No claim is made for originality, although the much that is new, which, as far as we have been able to serve, has not before appeared in print. While the main divisions of the book have followed conventional lines, the subject matter treated is practically new.

It is believed that it is impossible to understand the nature of a subject and its possibilities without being familiar with its history; therefore considerable attention has been devoted to this part of the work. The author has carefully gleaned the information that was available on this subject in many of the public and private libraries of New York, Boston, Hartford, Philadelphia, Rochester and Chicago, but more

## PREFACE

cially from the Historical Library of the University of Wisconsin, where a few rare works were found.

Those divisions, relating to the controversial subjects of government insurance and federal supervision of insurance, have been treated from the historical standpoint, in which the author has been careful to give the arguments on both sides of these questions.

The subject of fire hazards and the closely related topic of rating have been treated in such a manner as to set forth the essential features of these topics. The underlying principles of schedule rating, as shown in the Mercantile schedules and the Dean schedules, have been quite fully developed owing to the fact that there is much in these subjects which still demand the careful attention of all students who wish to gain a knowledge of the fire insurance business. While there will undoubtedly be modifications of the system of schedule rating, so as to introduce a new factor for the conflagration hazard, still it is doubtful whether there will be many changes in the underlying principles which their authors have already developed. The rating and grading schedules that have lately been evolved by Mr. E. G. Richards, Chairman of the Actuarial Committee of the National Board of Fire Underwriters, have also received due treatment. The author believes that the time is near at hand when a system of rating risks will be based upon the experience of the companies. Mr. Richards' efforts are an attempt in the right direction, and his method has been set forth at considerable length in the hope that it may induce others to help solve the problem.

That part of the theme relating to fire prevention, which treats of the means of egress from public buildings, has received its proper share of attention. A large number of lives are lost every year through inadequate means of escape from burning buildings. This is unnecessary and a crime against society.



The author has endeavored to bring this out in as clear a manner as possible, and at the same time to make suggestions which have received the sanction of engineers on this subject.

The chapter relating to the examination of fire insurance companies will be found to be entirely new. It is the result of the author's experience in this work covering a period of ten years. During that time he has had unusual opportunities for studying the subject, having examined the records of nearly every fire insurance company transacting business in the state of Wisconsin. Some of these examinations have been very brief, it is true; but others have been of a more extended form. It is to be hoped that the ardent student of fire insurance, who desires to make himself familiar with this subject, will be able to obtain much useful information from a perusal of this topic.

Introducing this chapter is one covering, in a cursory sort of a way, the subject of fire insurance accounting. This, in its very nature, must be brief, but it is hoped that the author has been able to present the essential elements relating to this subject. Annual statement work, even among our older companies, is a subject that is approached with considerable feeling of dread and an undue amount of hard labor. This is unnecessary, and if the suggestions made by the author are followed, it is believed that the auditors and accountants of the companies will be able to make up their annual reports with facility and ease.

The author believed that the book would not be quite complete without outlining briefly the experience which architects and engineers have had in dealing with different forms of building material. It is true that this has been treated very briefly, because the work had already been extended far beyond its original conception.

Agency management is a large subject, but it has been dwelt upon briefly owing to the different methods which various man-

agements use with their agency force. The entire explanation between a good and a poor agency force is found in the strength of the management of the company. This the author has endeavored to bring out quite clearly.

Over and above all, the real excuse for this work is found in an innate desire on the part of the author to leave something behind him which will in a small degree stand for the services which he has performed in connection with departmental work. It is not too much to say that he is not ambitious, and pecuniary benefits have been entirely disregarded. If he has been able to say anything at all, which will help to a better understanding of the subject, he will feel that he has been fully repaid.

EDWARD A. KETCHAM.

Madison, Wisconsin,

April 10, 1916

# FIRE INSURANCE

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## CHAPTER I

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### BASIC PRINCIPLES OF INSURANCE AND SOME COMMON TERMS DEFINED

In the study of any subject, it is very important that the primary elements involved in the work be clearly understood. This is especially true of insurance, which, after all, is not comprehended by the great mass of the people, and, consequently, presents a many sided aspect to them. Premiums come around with great regularity, and many do not, during their lifetime, receive any personal benefits from them. Is it any wonder that the subject is frequently misinterpreted and its real objects and aims overlooked? It is the intent of these papers to discuss the more important phases of the subject and endeavor to determine, if possible, what should be a proper attitude toward this economic problem. In doing so, we shall try to present the subject in an inductive manner, use copious, concrete illustrations, and avoid technical terms as much as possible.

*Insurance—Mutual Helpfulness*

Disasters, great and small, come around with ever recurring frequency. The elements, wind, water, and fire, are constantly at work bringing to naught the best endeavors of the race, as well as promoting their greatest triumphs. The wind every year destroys millions of dollars worth of farm crops, timber, buildings, and ships at sea, to say nothing of human life. Floods, tidal waves, volcanoes, and earthquakes have been the causes of the greatest catastrophes of history. Nevertheless, in the steady, appalling destruction which is wrought, the losses by fire easily rank as first in importance. In this country alone the fire loss amounts in round numbers to \$200,000,000 per year in addition to snuffing out the lives of thousands of people. During the year 1914, some of the graver disasters were the following:

	Loss of Life
Mine explosion, Eccles, W. Va.....	213
Volcanic eruption, Hebrides .....	600
Storm on Baltic Sea .....	100
Volcanic eruption in Japan .....	500
Hurricane, Kuban, Russia .....	1,500
Earthquake, Calabria, Sicily .....	200
Collision, Empress of Ireland .....	1,027
Flood in China .....	10,000
Flood, Kwang Tung, China .....	3,300
Earthquake, Asia Minor .....	3,000
Railroad accident, France .....	600
Gas explosion, Lisbon .....	100
Railroad collision, Kalisa, Poland .....	1,000

This country was quite free, during 1914, of catastrophes of such magnitude, but the loss of life from minor ones was very great. The following table gives the fatalities reported by telegraph, and in the columns of the local papers:

Drownings .....	8,496
Fires .....	2,315
Mines .....	3,457
Storms and cyclones.. ..	214
Explosions .....	449
Electricity .....	236
Lightning .....	345
Asphyxiation .....	193
Elevators .....	61
<hr/>	
Total .....	15,766

The number seriously injured by automobile accidents in the United States was 5,043, out of which 1,814 were killed outright. Ocean marine disasters claimed 1,295 victims, and inland waters, 1,224. The number of homicides was 8,251 and suicides, 13,965. It will be found that in the United States, a man's chance of losing his life or being seriously injured through accidents or catastrophes averages approximately about 1 to 1,000.

These statistics are not unusual, for if we were to search the records for 1913 we would find that the loss by fire was \$7,000,000 more than during 1914, and the number killed or seriously wounded would approximate closely the same number. As we go back in history we find similar conditions until our statistics become less reliable and more local, and, finally, cease altogether. Disasters have therefore occurred in all ages of the world since the advent of man, and the loss of life in the early ages must have been greater in proportion to the number of inhabitants than to-day owing to the violence of the catastrophes and the lack of proper medical treatment.

In the month of June, 1914, a conflagration occurred in the city of Salem, Massachusetts, which wiped out \$12,000,000 worth of property. Many people, who had built themselves beautiful homes in the French section of the city, found themselves temporarily destitute. Within ninety days from the date

of this calamity, fire insurance companies had rushed nearly \$10,000,000 to this city to relieve the distress and to make good the loss to the insured. Every state in the Union contributed toward this sum. The people of the state of Wisconsin paid through fire insurance companies about \$240,000 of this amount. The money contributed by the people made it possible for the inhabitants of Salem to rebuild their homes and places of business and to commence life again with little loss.

In November following the Salem fire, the city of Galveston, Texas, suffered a \$1,000,000 loss. Undoubtedly many people in Salem, as well as other parts of the country, helped to make good this loss to the people in Galveston. Now, Salem, Galveston, and all the other parts of the country did the same thing for the residents of Jeanette, Pennsylvania, where another \$1,000,000 loss by fire occurred, and these three in turn helped the people of Durham, North Carolina, to make good their loss, where another fire licked up \$1,000,000 worth of property. These large sums were obtained from people who had little in common with each other and who would have been practically impotent to help one another in distress.

These are illustrations of "mutual helpfulness" as it exists to-day, and it is the primitive ideal upon which all forms of insurance have been founded. Insurance is a form of mutual helpfulness in which the contributions of the many make good the money loss of the few. It is one form of the golden rule applied to business affairs. Because of this, it must have existed from the beginning of history, and will, no doubt, become a greater economic force in the future as men become more humane and intelligent. While it is claimed by some, that insurance to-day is purely a business proposition, its basis at least rests upon humanitarian principles.

*Insurance—Indemnification*

The "making good of a loss" to the insured can be expressed quite clearly by means of a technical term in insurance nomenclature. It is known as "indemnification." We should get a clear understanding of this word and its various forms, for it is a very important term in insurance phraseology. We are now in a position to define the term "insurance" technically. Insurance is indemnity against loss. The definition applies more particularly to losses occurring to property, or arising out of losses in time. In order to have it apply to life insurance, we must make an hypothesis that a life, able to pay a premium, has a money value to society. This is true, but let us remember that it is not the whole truth lest we become mercenary and honor only those whom the fickle god has favored. Eli Whitney died comparatively poor, still he is said to have added \$600,000,000 to the wealth of the southern states. Who could place a money value upon a life like that of Abraham Lincoln? Who can determine in dollars and cents the value to society of the long list of eminent teachers, preachers, statesmen, scientists, doctors, and writers that have died poor men? I think no one will try. Nevertheless, in spite of the foregoing, the hypothesis is true and a short analysis will prove it to be so. A man who can rear a family and lay up a small sum of money in the form of insurance has added to the general wealth of the country and is worth that amount, at least, to society. The wife and children, dependent upon the husband and father for their daily bread, meet with a distinct money loss in his death. The insurance company simply indemnifies the wife and through her, society, when they pay to her the protection which he had purchased. Therefore, our definition for insurance will apply to life insurance and all other forms of insurance.

*The Need of Insurance Companies*

In order that the plan of mutual indemnity may be carried out among people scattered over a wide extent of territory, it is necessary that some agency be employed, which will give its time and attention to the work, as the details are very great. Equitable sums must be collected from individuals desiring varying forms of indemnification, or benefits, so that there will be no discrimination among those belonging to the same group. This is the highly complex problem known as rate-making. Then comes the search for people who are willing to make the necessary sacrifice to belong to a group wanting mutual indemnity against loss. This requires a highly skilled force of men who are adepts at the work. They must not only find the people willing to make the necessary sacrifice, but must be able to select their applicants so as to promote the best interest of the entire group. This is the problem of the agency force, and it is one of the most important in connection with the plan of mutual indemnity. Next the money must be collected from the members of the group and be transmitted to the home office of the association. This may be done through the agency force, or by separate collectors. The details of taking care of the business at the home office are very great and require constant watching. This again requires a large force of skilled help, some of whom direct the entire affairs of the association, others the entries in records, and still another class who review the applicants recommended by the agents and again sifts out the unworthy. After the money reaches the home office and proper entries are made in the records, it must, as soon as a sufficient amount can be accumulated, be invested in interest-bearing securities. This again requires knowledge and experience in the business world. Finally, the last step is the distribution of the funds to loss claimants. This again requires a force of



skilled men, engineers, and investigators. Losses must be carefully determined if we are to carry out the idea of just indemnity. In most cases the members will want all and frequently more than a sufficient amount to indemnify them for their losses. Fraudulent claims must be investigated and frequently brought to court. On the other hand, men handling claims must be those who are blessed with good judgment and who will not take advantage of a claimant in his hour of need. The whole system depends upon strong, intelligent men having a high sense of honor. None other should engage in the work.

### *Insurance Companies*

In order to make insurance feasible and practicable to a large number of people, companies have been chartered by the various states of the United States and foreign governments—especially England, France, Germany, Sweden, and Russia—to carry on the business of insurance. These companies give their entire time and attention to the business, and their incorporators frequently put up large sums of money as a guarantee of their good faith in carrying out their contracts for indemnity in case of loss. Such companies are called “insurance companies.” No one company tries to write all forms of insurance and many states forbid companies to carry on several dissimilar forms of insurance. The officials become experts by following a single form, or several closely related forms, and thereby serve the people more efficiently. This segregation of insurance into classes has divided the companies into many different kinds. Some of the more common forms are as follows:

Life Insurance	Fidelity Insurance
Fire Insurance	Burglary Insurance
Marine Insurance	Plate Glass Insurance
Tornado and Windstorm Insurance	Automobile Insurance

Hail Insurance	Teams and Property Damage
Health and Accident	Insurance
Insurance	Employers' Collective
Old Age Insurance	Insurance
Liability Insurance	Live Stock Insurance
Workmen's Compensation	Credit Insurance
Insurance	Title Insurance

### *Stock and Mutual Companies*

Insurance companies may again be divided into two other forms depending upon whether they are organized for profit to the organizers or without profit. The former of these are called stock companies, and the latter mutual companies. Stock companies are required to have a cash capital in order to guarantee the carrying out of their contracts. The capital is raised by the sale of stock which gives every stockholder the right to share in the profits of the business in proportion to the amount of stock owned. The profits distributed to the shareholders are called dividends. Dividends are declared from the surplus of the company after making provision for the payment of all claims and putting aside the necessary reserves. This class of insurance companies has been very successful owing to its cash capital, interest accumulations thereon, and the desire to have an adequate rate, in order that there may be something left over for dividends. They approach quite closely to a pure business proposition, but it should never be overlooked that the ideal upon which they were founded was "mutual helpfulness" and that company is not living up to its high ideal if it pays its claims reluctantly and beats down its loss claimants below a fair indemnity for losses suffered, in order to make a profit for its stockholders.

The primitive insurance organizations were purely mutual. This class of companies is not organized for profit and the

policyholders share equitably in the surplus of the company. They have no capital stock and frequently no deposit for contingencies, consequently mutual fire insurance companies have been unable to withstand a series of heavy losses. Owing to the great mortality in this class of companies, they have, until quite recently, lost the confidence of the large insurers. They are ordinarily divided into two classes, namely, farm mutuals and city and village mutuals. The former of these limits its risks to farm property, while the latter does a more general business in a restricted territory. Because of the absence of conflagrations, the farm mutuals have been quite successful but the future of city and village mutuals is yet unknown. A few of these through careful management, and a saving in expenses are upon a sound financial basis.

There has lately come into existence a class of mutual fire insurance companies known as the New England factory mutuals, which bid fair to make a lasting impression upon insurance companies writing special hazards. The methods pursued by these companies will be taken up later in this series of articles.

Some of our largest life insurance companies are purely mutual and rank among the most stable institutions in existence. In these companies the rates are based upon mortality tables which are entirely adequate to meet every contingency as experience has proved. The desire to declare large dividends to their policyholders has kept the expenses down to modest proportions and has greatly stimulated the growth of this class of companies. On the other hand there is a class of life insurance companies that are purely mutual which have not based their rates upon a mortality table and some of the most lamentable failures in life insurance have come from these companies. They are now going through a transition period of rate adjustment, which should, eventually, make them safe and secure.

*Some Common Terms*

Insurance is both a mathematical and a scientific subject. As such, it employs certain technical terms which convey to the mind definite ideas that cannot be expressed as well in any other way. By the use of these terms, we can communicate our thoughts to others fluently and unambiguously. Some of these terms are common to all forms of insurance, while others apply to special forms. The former constitute the older and more common terms in our insurance vocabulary, while the latter are of more recent origin. An understanding of the common terms is imperative to a correct understanding of the subject. Among these we find such terms as policy, premium, reserve, risk, chance, hazard and average.

**Policy:**—The word policy is from the Latin word “Polliceor” and means “I promise.” In the vocabulary of insurance it refers to the contract between the insurer and the insured. In most forms of insurance it is the conditional promise, usually written, to pay the amount of, or otherwise to make good, the whole, or a portion of any loss, not exceeding the amount stipulated in the face of the contract. The word seems to have undergone many changes, meaning different things during the decades passed away. During the middle ages it was used to designate money. In England it has been applied to “a warrant or ticket for money in the public funds.” In life insurance its meaning is somewhat different from that of other forms of insurance. In the former it refers to a contract involving the contingency of death, in which the minds of the parties thereto have met and agreed upon the terms and conditions of the underwriting.

**Premium:**—The word premium is derived from the Latin “Praemium” and was originally translated as meaning “what one has got before, or better than others.” To-day it means the

sum paid for insurance. It is the consideration expressed in the policy. In most forms of insurance it is an annual payment made by the insured to the insurer as a consideration for protection against a possible contingency. If the consideration is paid monthly it is rarely called a premium, but is known as a monthly assessment or installment. In life insurance, the consideration may be paid in one lump sum, and it is then called a single premium.

**Reserve:**—This term is from the Latin “Reservare” and originally meant “to keep back.” In insurance it means the funds kept on hand to meet liabilities. The reserves of an insurance company form a very large part of its non-ledger liabilities; as a reserve for unpaid losses, a reserve for unearned premium, a reserve for expenses and taxes, a reserve for the present value of life policies in force, or a reserve for unpaid dividends. The computation of the reinsurance reserve in all forms of insurance is one of the difficult features connected with the determination of the liabilities of an insurance company.

**Risk:**—The word risk is from the French “risque” and in insurance means “the chance of loss” or “the perils to the subject matter of insurance covered by “the contract.” We speak of a building as being a good risk or a poor risk meaning thereby that it is the thing which is subject to loss. In life insurance some men are good risks, others are poor risks. In liability insurance a plant that is well protected from danger by safety devices would be called a good risk while one that is open to danger and in which workmen are frequently injured would be called a poor risk.

**Chance:**—The word chance is found in the middle English, old English, French, Low Latin, Sanscrit, Latin and English. It is, therefore, a word which has come to us through many tongues and is found in many languages. Its common meaning is shown by such phrases as “the happening of events,” “something that befalls, as the result of unknown or unconsid-

ered force." In this sense the word chance means the absence of assignable cause. Besides the above, it is used to express the absence of design. Its meaning in this sense is shown in such synonyms as fortune, accident, hazard, lot, casualty, contingency, undertaking, a toss-up, a turn of the dice or cards, a God-send, luck, a run of luck, wager, bet, unintentional, aimless. Note the meaning in this sentence: "The world was not created by chance, but by natural law."

Hazard:—The word hazard is supposed to be derived from the French word "hazard" or the Spanish word "azar." It is frequently used incorrectly with the word risk. Notice these phrases which give the meaning of the word: "An unforeseen disaster," "an unfortunate card or throw at dice," "a fortuitous event," "danger or peril" and "anything risked." In insurance it refers in a restricted sense to the condition or process or characteristic peculiar to a risk which in itself will cause loss, for instance, we speak of heating, lighting, wiring, fuel, power, drugs, matches, etc., as being common hazards while the cutting block scrapings from a boot and shoe factory or the picker room hazard in a cotton mill are known as special hazards. A careful study of the subject of hazards is essential to a correct understanding of the subject of underwriting.

Average:—The word average is derived from the Latin word "habere," and means "to have." The French "avoir" means property. It refers to an equitable distribution of loss or expense among all interested. In mathematics it means a mean proportion or an arithmetical mean. In general it refers to any general statement derived from comparison of divers specific cases. An average is obtained by taking the sum of the various numbers that compose the specific items and dividing the result by the number of specific items. Thus, if A loses \$5, B \$9, C \$16, the sum is \$30.00 and the average loss to each is \$10, that is, it means that the sum of the excesses above \$10 are equal to the deficiencies below \$10. This word is fre-

quently used in the sense of a mean and that is undoubtedly its meaning in insurance.

**Insurance and Averages:**—It has been said that insurance is based upon averages. This is strictly correct if the word is used in the sense of a mean. The death of a single individual is uncertain, but if we have a large enough group it is possible to find the average number that will die out of every thousand that start out at a given age. The larger the group, the more accurate will be our deductions. The smaller the group, the less certain we are of results. In a fire insurance company, the loss of a single house is very uncertain and it may not burn at all. But, if we increase the number of buildings to a very large number, we may be reasonably sure that a certain number of the group will burn. If this test is applied to a particular classification, a fairly accurate result can be obtained of the probable number of buildings that will burn under normal conditions. If the insurance value of the buildings is compared with the net premiums earned, the loss ratio for this particular classification may be obtained. Insurance companies frequently make the grave error of carrying a few risks with an appraisal value of a very large amount. The average on such a classification cannot be determined with any degree of certainty and the losses will fluctuate accordingly, being sometimes above the normal and others below. A company that restricts its risks to a single city, town or village, unless the number of risks is large, cannot determine the normal loss ratio with any degree of accuracy. The companies that do an interstate business or a transcontinental business have a better basis for the determination of losses than those which do not.

### *Effect of Wide Distribution of Risks*

The normal loss ratio of fire insurance companies is not the cause of the failure of so many companies, because the normal loss ratio of companies that carry a large number of risks can

be approximately determined and provisions for these losses can be made in the premium income. On the other hand, conflagrations are uncertain. They come when least expected, and the property loss which they occasion is frequently very great. They sometimes destroy a whole city, or they may lay in waste only the congested centers.

Ordinarily companies do not make a sufficient provision in their premiums for these catastrophes. But very few companies carry a conflagration reserve among their liabilities. Oftentimes, the companies are not entirely to blame for this. The strife resulting from keen competition tends to produce such a low rate of premium that no provision is possible for the conflagration hazard. When the companies have pooled their interests in an endeavor to make a sufficient rate, they have frequently met with such opposition from the general public that it has been impossible to carry it out. Sometimes the management is to blame. Some officials during the prosperous years have declared such large dividends either to the stockholders or policyholders that they have depleted the surplus to such an extent that no provision can be made for very large losses. Consequently, the wayside is strewn with the wrecks of fire insurance companies that have succumbed to the failure to make provisions for the inevitable.

A wide distribution of risks over a large territory has a very marked effect upon the results of a conflagration. Other things being equal, a company that restricts its risks to a small territory is apt to succumb to a conflagration more quickly than one that does an interstate business. It will be found in most cases that a company which does a local business segregates its risks in a smaller area than one that does a state wide business. Such a company takes too many risks in a single town or city and, though the risks may be well scattered as to block limits, still when the conflagration comes it leaps over blocks and sweeps whole sections of a city out of existence. Such a company is



sure to suffer from a conflagration. The test is not too many risks in a block, but too many in a town or city. It is said that if a conflagration were to occur in the city of New York, it would ruin nearly every fire insurance company transacting business in the United States. The companies have accepted risks far in excess of their admitted assets. This is a dangerous condition which should be remedied through the statutes. No company should be allowed to carry risks in any one city in excess of its capital and surplus. The different departments of insurance in the various states have not taken hold of this question with the same vigor with which they have solved others. In connection with this subject the large reinsurance companies have been accepting risks from the same city through various companies until their liabilities far exceed their ability to pay. Many of these reinsurance companies are bound by reinsurance contracts which require them to carry one-half of any risk that the direct writing company will carry. As a consequence they have been obliged to accept more insurance than is safe in some of our cities. In the case of a conflagration, the companies which have ceded the risks in order to get protection may find themselves without any protection. This is a subject which should be given greater consideration by officials of companies and insurance departments.

Companies which have a wide distribution of risks are in little danger from conflagrations. Suppose that a company doing an interstate business should distribute its risks among the large cities in such a manner that New York would have 10 per cent; Chicago, 10 per cent; Milwaukee, 5 per cent; St. Louis, 10 per cent; Kansas City, 10 per cent; Spokane, 10 per cent; Rochester, 10 per cent; St. Paul, 5 per cent; Minneapolis, 5 per cent; Boston, 10 per cent; Philadelphia, 10 per cent; and Baltimore, 5 per cent. Suppose, also, that in these cities the policy liabilities of the company did not exceed the capital and surplus of the company. If the above distribution

were maintained, a conflagration in one of these large cities would not make the company insolvent.

Some companies and associations have been very successful by taking a single line of risks because they were so widely scattered. This is illustrated in the case of the cotton gin which was considered, a few years ago, as being a very hazardous risk. A certain association in the city of New York made a specialty of taking this particular line of risk and its experience was so favorable that in a short time the rates were lowered.

The managers of some of our foreign companies allot to their local managers in the United States a percentage of their total business and will accept only that proportion from any local manager. By doing this, some of our foreign companies have made an international reputation for financial stability. Suppose that an English company allotted to its United States manager 25 per cent of the gross premiums written by the company; 25 per cent likewise to Canada; 20 per cent to its home country, England; 15 per cent to Australia; 10 per cent to Chile; and 5 per cent to Japan. If a large conflagration should occur in either New York, London, Montreal, Sidney, Yokohama, or Santiago, it would not endanger the financial condition of the fire companies if their rule in regard to the acceptance of only a percentage of the assets were followed. One of the requirements of good underwriting is to see that the risks are widely scattered as to cities and towns and possibly to countries, and that the risks accepted should in no event exceed the policyholders' surplus.

The effect of the extent of territory on a life insurance company is also an important factor in mortality gains. Owing, however, to the advance of medical science and the care furnished the sick, it is not so important a factor as it was in former years. The effects of smallpox, diphtheria, tuberculosis, pneumonia, cholera, and other contagious diseases are usually restricted to local areas and are much more frequent in some local-

ities than in others. Consequently, in order to get a favorable mortality, it is better to have a large territory from which to draw risks than a small one. The healthfulness of the country frequently makes up for the mortality of our cities, but in some cities the reverse is true. Happily, however, our mortality tables are based upon a loss ratio sufficiently great to withstand all the effects of disease, floods, war, and pestilence, which have, within recent years, afflicted the country.

The above does not exhaust the subject of the effects of the distribution of risks upon the various forms of insurance. It is only suggestive, but it is to be hoped that this mention of the subject will induce others to give it more thorough treatment.

## CHAPTER II

## EARLY HISTORY OF FIRE INSURANCE

We have stated in the previous chapter that insurance was a form of mutual helpfulness and as such it must have existed from the very earliest times.

*Code of Hammurabi*

In the code of Hammurabi, sometimes called Cammurabi, the Biblical Anraphael, King of Babylon, B. C. 2285 to 2242, it is written:

"If the brigand has not been caught, the man who has been despoiled shall recount before God what he has lost and the city and governor in whose land and district the brigandage took place shall render back to him whatsoever of his was lost. If it was a life, the city and governor shall pay one mina of silver to his people.

"If a man has a debt upon him and a thunder storm ravaged his field or carried away his produce, or the corn has not grown through lack of water, in that year he shall not return corn to his creditor, he shall alter his tablet and shall not give interest for that year." (Sec. 48.)

"If a fire break out and catch in thorns so that the stacks of corn or the standing corn or the field be consumed therewith; he that kindled the fire shall surely make restitution." (Exodus 22:6.)

*Communes of Assyria*

In a paper read by Mr. Charles Stewart of the Lancashire Insurance Co., before the Insurance and Actuarial Society of Glasgow, he gave a very interesting account of the beginning of insurance as far as he was able to trace it back. He states as follows:

"The earliest application of fire insurance known to us was in connection with communes of towns and districts. These communes flourished in Assyria and the east more than 2500 years ago. Judges, priests and magistrates were appointed for each town and district with full power to levy contributions from each member of the commune to provide a fund against sudden calamities, such as drought and fire. If the judges were satisfied that the fire was accidental, they empowered the magistrates to assess the members of the commune either in kind or in money and in the event of any member being unable, through poverty, to meet his share of the contributions, the deficiency was made up from the common fund. These communes still exist in a modified form in China. In some towns of Russia the inhabitants are jointly responsible for accidental fires and the government makes enforced contributions according to the status and wealth of the inhabitants of the town or village. These communists had and have nothing in common with the communist of the present day, which means the negation of private property."

*Roman Republic*

During the Roman Republic, the Roman government, for the purpose of encouraging merchants who had contracted to supply the army abroad with provisions, agreed to bear all losses that might happen to the cargoes during the voyages from perils of the sea or hostile capture. (Livy). So Seu-

tonius, chapter 2, says that during the period of apprehended scarcity at Rome the emperor Claudius offered indemnity to those who would bring provisions to the city.

### *Relation of Guilds to Insurance*

Mr. Walford in his Insurance Cyclopedia in volume 3, page 438, gives the relation of Guilds to insurance in the following paragraph:

“The first glimmer of the principle of mutual insurance arises in connection with the Anglo-Saxon Guilds, wherein the members made fixed periodical payments towards a common fund, whereby they secured each other against loss from fire, water, robbery or other calamity.”

Here we have an acknowledgment of the necessity of protection against fire and an indication that the only means of protection available was by means of mutual association for common objects of protection. It is important in this connection briefly to note that Guilds appear to have been very common among the ancient Greeks and Romans; and their objects were almost identical with those of the Guilds of the Anglo-Saxon of later date.

In Germany some of the Guilds were used for the purpose of conducting mutual assurance associations. One of the most familiar of these is the Feuer Casse at Hamburg which is said to be one of the earliest fire insurance associations of which there is any knowledge. In the year 1591 we have several small Brandgilden entering into “fauer” contracts for mutual insurance. These seem to have prospered and multiplied until in 1676 it was determined to unite them into one general Feuer Casse. At this time, Walpold, in his Cyclopedia states, there were about 46 in number. They have existed in one form or another and undergone various changes since that time, and, a few years ago, embraced all the suburbs of Hamburg as well as the city. The fire guilds (Brandgilden) existed in

Schleswig-Holstein in the early part of the 15th century and took the shape of local mutual fire insurance associations on the state or municipal plan. Walpold states that there are still in existence seven of these, one of the most noted being located at Kiel. The society is a club of proprietors of large estates in Holstein. Only the estates and dependencies, buildings and goods, are insured.

### *Custom of Furnes (1240)*

Thomas, Count of Flanders, in article 9 of the law of Cora or Keure as it is termed, recites the following liability of the Communes which is known as the Custom of Furnes:

"In whatsoever house a fire shall have been secretly made, the whole place instantly makes good the damage through those whom the guardians select; but if the malefactor can be found out, he is banished forever, and the damage is made good out of his property; the residue indeed he yields up to the court. Truly, he who can exculpate himself from the accusations will be commended by those guardians; but until he can do so, he is suspended. All his goods will be in the pleasure of the court; the damage being first restored to him who has the injury."

It will be seen from the above that the entire Commune was made responsible for the payment of fire losses, and it marks the beginning of the doctrine of personal responsibility for fires. There is no record of the method in which the collections were made, whether by flat rate of value of the property to be insured or a special rate for each according to its particular hazard.

### *Plan of Insurance Submitted to Count von Oldenberg (1609)*

One of the most interesting plans for insuring dwellings from fire apart from the guilds or mutual schemes was the one that was presented to Count Anthon Gunther von Oldenberg in

Germany in the year 1609. Beckman in his history of Inventions, Bohn's edition 1846, gives an account of this plan in the following language:

"As many fires happen by which the great number of people lose their property, the Count might lay before his subjects the danger of such accidents; and propose to them that if they would, either singly or united, put a value on their houses, and, for every hundred dollars valuation, pay to him yearly one dollar, he, on the other hand, would engage that in case by the will of God their houses should be reduced to ashes, the misfortune of war excepted, he would take upon himself the loss and pay to the sufferers as much money as might be sufficient to rebuild them; and that all persons, both natives and foreigners, who might be desirous of sharing in the benefits of this institution should not be excluded."

The Count allowed that the object of the plan was good considered from every point of view and that a company composed of common individuals might be formed to insure each others' houses and pay the losses sustained by fire, but he concluded that if he undertook the plan providence might be tempted; that his own subjects might be displeased; and that improper ideas being formed of his conduct, he might be accused unjustly of avarice. The Count dismissed the ingenious plan presented to him but not until he had rewarded the author of the scheme with unusual liberality.

*Plan of Insurance by Ryley and Mabb (1638)*

In Mr. F. B. Relton's admirable book on fire insurance companies, he states that there were many schemes for insurance in England during the period from 1635 to 1660, inclusive. All of these, however, came to naught, but there was "presented" to King Charles the First in 1638 the petition of William Ryley and Edward Mabb, for a plan of insurance



against losses occurring in the city of London. The petition reads as follows:

"To the King, Most Excellent Majesty,—the humble petitions of William Ryley, one of your Majesty's servants, and of Edward Mabb, gent, sheweth that whereas there have been and are daily many great losses by the lamentable fires happened in and about the city of London as by late experience hath appeared to the inhabitants thereof; and for prevention whereof your Majesty's petitioners present the propositions hereunto annexed, who may be praying that your Majesty will graciously please to grant a patent for the sole ordering and disposing of the same for the term of 41 years, according to the purposes hereunto annexed.

"The owners or inhabitants of houses within the city and suburbs of London, together with the city of West Minister and borough of South Wake, paying 12 pence per annum for every house yielding 20 L yearly rent, each more or less after the rate of 12 pence yearly for every 20 L shall have his house or houses re-edified according to his Majesty's proclamation, and set in as good or better state as they were before in case any loss or casualty by fire shall happen unto them. For security hereof there shall be deposited 5,000 L into the Chamber of London which shall continually lay wholly and entire to receive for interest 5 L in the hundred L which increase shall run until it shall amount to 10,000 L. And there shall always be kept a continual watch in all parts of the city and suburbs all night that if any fire should break forth it may presently be spied. And engines shall be made and kept in every ward thereof to be ready at hand for the quenching of the same, and the watch brought speedily to the fire, and those several watchers in every ward shall speedily repay themselves to assist where the fire shall be. Reserves of water shall be made in convenient places for sudden use."

*The Great Fire of London*

In the year 1666 occurred the event that finally brought forth our modern fire insurance company. In that year occurred the great fire of London. It commenced on September 2nd and lasted for four days and four nights. It was said that 436 acres of the city were burned and that over 13,000 buildings were destroyed. The loss has been variously estimated from 10 to 12 million pounds in those days which would have been equivalent to over three hundred million dollars in our day. Nothing like this had ever occurred in all history. It is said when Nero burned Rome that the loss could not have been as great as it was in the districts of London. Over two hundred thousand people were left homeless and they camped on the outside of the city in tents or what other method of shelter they possessed. The conflagration was finally stopped by the blowing up of buildings in its path by means of gun powder. It is said that Pepys suggested the plan, although he is such a noted gossip that reliance cannot be placed upon the fact.

*Beginning of Modern Insurance (1667 to 1680)*

The great fire of London brought forcibly to the attention of the people the need of some form of protection against such calamities. In 1667, one Nicholas Barbon, a son of the noted "Praise God" Barebones of the Cromwellian Parliament and a great builder in London, opened an office where he individually proposed to insure buildings against the ravages of fire. In 1680, after having had some success, he formed a partnership with Samuel Vincent, John Parsons and Felix Alvert which was called The Fire Office. The company, for a given consideration which was placed at 6 pence per 100 L rental for brick houses and one shilling per 100 L rental for frame houses,

10 annual rentals being considered the value of the building, agreed to pay to the assured the amount of indemnity declared in the policy or contract should his house or building be destroyed by fire or to repair it should it be only damaged. No liability rested upon the assured beyond the payment of the premium. This contains the germ of the principles upon which our modern insurance companies transact business. For that reason the year 1680 has been designated as the beginning of fire insurance in England.

### *London Corporation (1674 to 1683)*

In 1674 a man by the name of Newbold presented a petition to the Lord Mayor and Aldermen and Common Council of the city of London a plan of municipal insurance. The chief features of the scheme were very alluring and were set forth in the following terms:

“There are 12,000 new brick houses in the city of London of the average value of 250 L. These insured at 3 per cent would produce a fund of 90,000 L. The annual interest upon this at 6 per cent would be 5,400 L. The loss amongst these houses, one year with another since the fire of London, had not amounted to 400 L per annum; so that allowing 1,000 L per annum for charges, the profit to the city by this design would be 4,000 L per annum.”

At first the mayor and the council were so full of business that they did not pay much attention to the scheme. But in November, 1679, the common council decided that the city should undertake it and ordered that it be immediately put in force. It was the purpose of Newbold to insure houses from one to 100 years and be submitted to the Court of Aldermen a table for such term insurance. Towards the close of the same year he presented his plan in the form of a pamphlet which has been much read and studied by men who believe in

municipal insurance. In November 1680 another committee was appointed to consider the plan of Newbold. This committee on the 17th day of June, 1681, reported that "the proposals would be of great advantage to the owners and inhabitants of all new buildings and that it was well worthy of an effectual proposition." The plan was put into force but on account of the undignified warfare between the corporation and the fire office of Dr. Barbon, it was finally abandoned in 1683. The corporation seems to have insured about 1670 buildings and it was a great disappointment to its organizers. Newbold seems to have reaped but very little benefit from this plan but he was rewarded the honor of making "two persons free of the city by riddance on paying to the Chamberlain 46 shillings and 8 pence apiece."

### *Friendly Society (1683)*

In this same year was organized the first mutual fire insurance company upon a modern basis. It was called the Friendly Society and it was so successful that it had an existence for over 100 years. The argument which was used as a reason for the adoption of such plan is set forth in the following language:

"It is very needless sure to use any arguments to persuade the inhabitants of this great city (London) of the advantages they may receive, as well in the quiet of their minds as in the real improvements of their assets, by having their houses secured from loss by fire. The terror of the late conflagration and its most sad and miserable effects are too fresh in the memories of those unfortunate persons who were without any relief in that great calamity. But that being without example in some one hundred of years past and hoping it may never be so again, we shall apply ourselves to the redress of such as may reasonably be expected every year and that by so equal, safe and easy a

method as we hope may give satisfaction to all persons that shall be concerned therein."

They stated in the margin of the paper that had the whole cities of London and Westminster been insured in this society, the loss by the great fire would not have been much above a sixth part of what they suffered.

Every person who entered this society was required to pay a larger premium on frame buildings than on brick. This charge was for the purpose of covering the expenses and the profits of those who operated the company. The insured deposited with the company a sum equal to five annual premiums as a guarantee that all future assessments would be paid when levied. In case the insured failed to pay his premium, the company was entitled to take the deposit as their own. The insured signed a contract or agreement to contribute his share towards every loss that the company might sustain up to an amount not exceeding 30 shillings for every 100 L of insurance. The officials of the company were called "undertakers" and they collected and distributed the funds of the company. This company was formed upon a very stable basis. A full account of the articles is given in F. B. Relton's work on fire insurance companies.

### *Hand-in-Hand (1696)*

Another very interesting organization was created in 1696. This company proposed to issue contracts of insurance with the understanding that the insured should deposit with the company a certain sum which was to be paid back less the expenses when the contract was terminated. It was also provided that the interest on invested funds should be distributed among the members or policyholders of the company. Each year a rate of assessment should be declared by the directors for the purpose of paying losses. It was assumed by the organizers of the company that the interest on the invested funds would pay for the

losses. This seems to have been the case as the company prospered and grew; and is in existence to-day. It confined its operation to the city of London and the suburbs. The original name of this company was Contributors for Insuring Houses, Chambers, or Rooms from Loss by Fire by Amicable Contributions. This very long and tiresome name to pronounce was afterwards changed to Amicable Contributors. In 1776 this company again changed its name to Hand-in-Hand because of the method that the company had of marking and designating buildings which they insured.

### *The Sun Insurance Office—A Partnership (1706-10)*

Up to this time all of the fire insurance companies which had been formed did not accept anything but houses and buildings as risks. The need of some forms of insurance on stocks of merchandise was very great. Credit in those days was indeed very limited. Merchandising was usually carried on by a few wealthy men and they took great care to watch their stock against damage or loss by fire. In all probabilities we know but little of the care exercised at this time by the owners of various stocks of goods. About 1706 a man by the name of Charles Povey who had been an underwriter at Lloyd's Coffee House opened an office for insuring stocks of goods. His scheme was ridiculed and his venture seems not to have been very successful. Still he persisted and agreed to insure stocks of merchandise in any part of Great Britain or Ireland and he organized a second fire office for this purpose. However, from lack of confidence by the general public, his enterprises were nearly a failure. Accordingly he organized a third company for the purpose of taking over the other two organizations. The new concern was called the London Insurers but in 1710 it changed its name to the Sun Fire Office. This company began a very successful career. Its form of organization was a

partnership and not a corporation, and, because of this fact, it has been one of the most unique companies in existence. The original contracts of the Sun Fire Office provided that the losses should be paid out of the reserve to be made up of one-half of the premiums paid, the liability of the company ceasing when the reserve should be exhausted. Under the stress of competition it finally adopted the plan of paying absolutely the face of its contract. This company does business to-day both in England and in the United States and its financial condition is such that it appeals to the insuring public.

### *Chartered Companies (1720 to 1797)*

The modern stock fire insurance company dates its origin from July 12, 1720, when the Lords Justices in Council, after dismissing numerous petitions and charters for unworthy insurance companies, granted to the Royal Exchange Assurance and the London Assurance charters giving them exclusive powers to transact marine insurance. The former of these companies had really a legal existence since 1564, when it was called the Mines Royal Company. It was amalgamated with the Governors, Assistants, and society of Mineral and Battery Works in 1714, under the name of the Mines Royal, Mineral and Battery Works. At that time they had no connection with insurance, but, in 1718, they determined to enter upon marine insurance. On August 12, 1717, a number of subscribers succeeded in raising one million pounds sterling for the purpose of insuring ships and merchandise at sea. The company was called the Mercers' Holding Marine Company and they petitioned for a charter. At the same time, certain knights, citizens, and merchants supposed to belong to the old Mines Royal Mineral and Battery Works, headed by Sir John Williams with a subscribed capital of one million pounds likewise petitioned for a charter. Both companies were

uncertain about obtaining a charter so they united in an effort to obtain a charter. This new company afterwards assumed the name of the Royal Exchange. A short time elapsed before the charter was granted, and it went into business and was called Onslow's Insurance Company because Thomas Lord Onslow was one of the chief promoters. Undoubtedly the name Royal Exchange may have been determined upon owing to Lord Onslow's connection with the Royal family. After passing through many changes and experiences, it exists to-day both in England and the United States as one of the foremost insurance companies.

The project of organizing the London Assurance Corporation was brought about by Lord Chetwynd, a member of an old Shropshire family. At this time some merchants who had failed to become members of the Royal Exchange, petitioned the Crown for a charter which finally lead to the establishment of a company called the London. As Lord Chetwynd could not get a charter, he joined forces with the London and the result was the granting of a charter to the London Assurance Corporation. It had a subscribed capital of two million pounds sterling divided into 80,000 shares at 25 pounds each. Only about 35,862 shares have been issued, and 12½ pounds per share has been paid on these.

With the organization of the Royal Exchange Assurance and the London Assurance, modern insurance had its real beginning, as they were both stock companies, being chartered by the government. In those days it was thought that a corporation would be more stable and would settle its losses more justly than individual subscribers. Subscribers were interested in reducing the payment of losses to as small an amount as possible and in nearly all cases the assured was obliged to commence suit and prosecute the subscriber or the subscribers in order to get the amount of insurance which was honestly due him from losses. The establishment of the corporation was undoubtedly



a distinct gain in this respect as it had a great influence over the underwriters and made them more liberal in their settlements.

Among the more important stock companies chartered by the English government we may mention the following:

The Bath Fire Office. Chartered June 24, 1767. Transferred to the Sun in 1827.

The Manchester Fire Office. Chartered in 1771. Ceased to exist in 1788.

The Liverpool Fire Office. Chartered 1777. Probably went out of business in 1825.

The Phoenix Fire Office. Chartered in 1782. This is one of the few companies organized during the eighteenth century which is still transacting a prosperous business. It has a branch office in the United States and is now known as the Phoenix of London.

The Norwich Union Fire Office. Chartered in 1797. This company is still in existence and transacting business both in Great Britain and the United States.

The Globe. Organized in 1797. Failing to get a charter, it was transferred to the Liverpool and London office in 1862. The amalgamated company afterwards became known as the Liverpool and London and Globe.

### *Lloyds (1680)*

During the 17th and 18th centuries, after the introduction of coffee into England, many coffee houses were established. These were places where people could go and be served with a cup of hot coffee. At that time, coffee was very high and its price made its use almost prohibitive. The purchase of coffee by the pound was quite out of the question for the common people, consequently centers were formed where it could be brewed and dispensed by the cupfuls. These were called coffee houses. Tea was also sold to people in the same way

and for a similar reason. When tea was first used in England it was sold as a medicine or cure-all for from £6 to £8 per pound.

Ashton in his social life in the reign of Queen Anne states that the first coffee house was established in the classic town of Oxford by a Jew named Jacobs, in the year 1650. It appears that the first one to be established in London was at Cornhill in St. Michael's alley by a foreigner, in the year 1652.

Haton in his *New Views of London*, very quaintly says: "I find it recorded that one James Farr, a barber who kept the coffee house which now is the Rainbow by the Inner Temple Gate (One of the first in England) was in the year 1657 presented by the inquest of St. Dunstan's in the West for making and selling a sort of liquor called coffee as a great nuisance and prejudice of the neighborhood, etc., and who would then have thought London would ever have had near 3,000 such nuisances and that coffee should have been, as now, so much drank by the best of quality and physicians."

These coffee houses became the meeting places of literary people, business men, society folks, political leaders, and promoters of all kinds. Nearly all the subscriptions for the sale of stock of insurance companies were taken at these places. The fire and marine insurance offices had quarters in the coffee houses for the promotion of their company. Among the number we might mention the following:

The Sun Fire Office. Paul's Coffee House, Queen Anne's Tavern, Braund's Head.

The Hand-in-Hand. Thomas Coffee House. St. Martin's Lane.

Friendly Society. Bridges against the Royal Exchange, Pope's Head Alley.

The Phoenix Fire Office. Rainbow Tavern, Fleet St.

The Globe. Ship & Castle, Cornhill.

### The Union, Amsterdam Coffee House, Behind the Royal Exchange.

Among the most famous was Lloyds on Tower street. It was kept in 1680 by Edward Lloyd. At that time Tower street was the center of maritime enterprises of London and Lloyd's Coffee House was the natural meeting place for seafaring people of all descriptions. Lloyd was a very enterprising person and established information bureaus in different parts of the world for the purpose of obtaining the movements of vessels, wrecks, salvages on partly lost cargoes and other items of interest connected with ocean traffic. These were posted up in the coffee house and captains and merchants engaged in oversea traffic eagerly sought his coffee house for information in regard to their ships or cargoes at sea. Like other coffee houses, stocks were sold, risks on ships and cargoes were offered to subscribers, and various other enterprises connected with ocean travel and trade was transacted around the table with cups of coffee to relieve the stress of the business transactions. In 1692 the coffee house was found to be too small to accommodate his patrons and so he removed it to Lombard street, at the corner of Abchurch Lane. In 1696 Lloyd began to publish a paper three times a week which was called the Lloyds News. This however was very short-lived, existing only six months owing to the fact that he is said to have printed some information which was quite harmless respecting the House of Lords. Edward Lloyd died February 15, 1713, but the good work which he had founded did not die with him but passed on to others. His name became attached to one of the largest insurance enterprises known to the world during the eighteenth and nineteenth centuries. The captains and merchants that gathered at Lloyds banded themselves together and published a journal which was called "Lloyds List." This paper continues to the present time and is the official publication

of the organization known as Lloyds. It contains all the shipping news as currently received and is generally recognized as the most reliable of the various sources of maritime news. In 1770, the business having considerably increased, it became necessary to find other accommodations. The underwriters, merchants, brokers and captains took up temporary quarters in Pope's Head Alley and in the following year appointed a committee of seventy-nine to find more commodious quarters. They finally engaged rooms in the northwest corner on the first floor of the Royal Exchange.

The real author and spirit of the Lloyds organization was a German who came from St. Petersburg and was named John Julius Angerstein. He came to England when he was quite young and by his energy, intelligence and business integrity became one of the foremost underwriters of insurance at Lloyds.

It is said even to this day that the policies of the Lloyds refer back to Lombard street, or the Royal Exchange in recognition of its origin. In the year 1838 the Royal Exchange was burned and for a short time the subscribers at Lloyds met at the South Sea House. At the present time they occupy the east end and northeast side of the upper part of the Royal Exchange.

In 1834 there was established an annual publication known as Lloyds Register of British and Foreign Shipping. It describes the general character of all vessels in the British Marine of not less than 100 tons besides a great many in other countries. It gives the name, material of construction and state of repairs of the various seagoing ships, their dimensions, registered tonnage, general equipment, date and place of construction, by whom constructed, the name of the owners, port of entry to which the vessels belongs, date of the last survey, and finally the name of the master and the date of his appointment. Supplementary lists are published in connection with the annual publication. In fact the Lloyds Register is a very complete

catalogue of all the various ships in the world. No marine insurance company would think of transacting business without having a copy of Lloyds Register near at hand.

The Lloyds at present also issue another publication called the Index. This is a list of all the British mercantile vessels showing their condition and location according to the latest reports. Some of the more important ships of foreign nations are also included in the Index. In addition to the three foregoing, it issues a publication called a Register of Captains. This is a biographical description of the service, proficiency and character of approximately 30,000 certified commanders in the British and foreign marine service. The Lloyds also issue a fifth publication called A Record of Losses which contains the losses which have occurred during the interval of publication. It is this system of intelligence that has made Lloyds one of the most important insurance organizations of England. In the year 1871 Lloyds became an incorporated organization in order to carry out its plan of collecting and disseminating information pertaining to shipping, conducting an insurance business, and protecting cargoes, ships and men who are wrecked at sea.

The method of transacting business at Lloyds differs but little at the present time from the methods employed in the days when the subscribers met in Lloyd's coffee house at Tower street, or Pope's Head Alley. A very good description of the method of conducting insurance at Lloyds has been written by Mr. Samuel Plimsoll in the magazine called the Nineteenth Century, vol. 25, page 329. We quote from this article as follows:

"There are seldom less than fifty underwriters on a policy, frequently over 100, not bound together at all, each individual can only act for himself, and accepts just so much of the whole risk as he pleases. He seldom, almost never, accepts for any large amount, always for a very small proportion indeed of the whole amount covered. The way of it is this: A member of

Lloyds first gives evidence or security as to his ability to pay losses (at the present time he is required to deposit with the committee on Lloyds security to the value of 5,000 pounds sterling). Then he has a desk allotted to him out of the 350 or 400 in the subscribers room in London alone where the bulk of underwriting is done. The proposals for insurance are handed around among the subscribers by the insurance brokers' clerks all day long. These proposals, called slips, give the name of the ship, amount to be insured, and rate per cent offered. Perhaps 60 or 70 of these slips, or even more, are laid before each underwriter daily. After reference to Lloyds List of ships he either passes it on, or if he decides to "take a line" upon it, he subscribes or "underwrites" his name, together with the amount he is willing to guarantee for, at the rate specified. This varies much and generally goes as low as 200 pounds or 100 pounds, frequently 50 pounds, and sometimes even less than that—never an amount large enough to warrant his disputing his liability in case of loss."

As the proposals for insurance mentioned in Mr. Primisoll's article are not limited to any particular form of insurance, it is not surprising to find that the subscribers at Lloyds take risks on every form of insurance known in this country and many forms which are unknown to us. Underwriters at Lloyds will accept risks on hulls and cargoes, on losses through fire, on land or sea, against death from accidents, merchandise or property of any description and some very unusual forms such as the passage of tariff bills or any other political event.

The principles employed by Lloyds has been transplanted to America and one may go to New York City even to-day and see practically the same procedure taking place in the underwriting of ships, cargoes and on large fire risks in cities.

One of the most important services rendered by Lloyds has been the relentless manner in which they have pursued and

prosecuted criminals for crimes and frauds connected with ocean traffic. "The Lloyds agent and detective are found everywhere and the fear of Lloyds prosecution never faltering and never failing has driven crimes from the high seas."

## CHAPTER III

## FIRE INSURANCE IN THE UNITED STATES

A survey of the subject of insurance in the United States naturally falls into four periods, each of which has its own peculiar characteristics. We do not mean by this that the growth was not gradual, but rather that there were certain distinct elements in one period which distinguishes it from the others. These periods are as follows:

First Period—Formative Time—1721-1835.

Second Period—Reservation—1835-1866.

Third Period—Co-operation and Rates—1866-1911.

Fourth Period—Growth of Government Insurance—1906 to the Present Time.

## FIRST PERIOD

*Formation of Companies*

The early colonists who came to this country were largely inhabitants of northern Europe. Some came from England, some from France, others from the Netherlands and some from Germany. The Englishman brought with him the ideas, customs and political thought of England, and the Frenchman the same from France. This was equally true of the Hollander and the German. The need of some form of protection against the perils of the sea and the ravages of fire was felt by the people of northern Europe. The plan, however, had not been worked out and it was in a very crude condition. There can



be no question but what those who braved the dangers of the sea felt the greater need of protection and were consequently the first in the field with requests for insurance. As early as 1682 vessels engaged in trade between England and the Colonies were insured against the dangers of the sea. Vessels coming to Boston, Philadelphia, New Amsterdam, and Jamestown were undoubtedly insured as were also their cargoes. Marine insurance was, therefore, the first form to be found in the early Colonies. In 1721 an advertisement appeared in the *American Weekly Mercury* announcing that John Copson of High Street, Philadelphia, intended to open an office for insurance of vessels, goods, and merchandise. This is the first mention of the subject of insurance that we find in a printed form in America. Because of this fact the date should be remembered. Previous to the opening of the offices of John Copson the insurance obtained on vessels and cargoes was underwritten in England. In 1762 in the London Coffee House, located in the southwest corner of High and Front Streets, Philadelphia, John Kidd and William Bradford announced that they would underwrite risks in general, and before the close of the century quite a number of such offices were established. The insurance office of Kidd and Bradford marks a distinct gain in the subject of insurance. They proposed not only to write marine insurance, but also insurance on buildings, goods and other risks. Not much has been told about this office nor what became of it, but undoubtedly like many others it survived for a period and then began to decline and finally ceased writing business altogether. We are unable to state whether the fire risks were on a paying basis or not, and we find no records showing the rates charged for such risks.

In Philadelphia the first steps taken toward the preservation of property were in the form of reducing the fire waste. For a number of years Philadelphia led all other cities in the Colonies in the number of its fire companies, fire engines and bucket

brigades. As early as 1730 the city authorized the purchase of three engines, four thousand buckets, twenty ladders and twenty-five hooks. In 1752 Philadelphia had approximately 2,076 dwelling houses and they were protected by seven fire extinguishing companies.

In this same year on February 18th, an announcement appeared in the Pennsylvania Gazette of a proposed set of articles for the organization of a fire insurance company in the city. It is said that this plan had the approval of no less a person than Benjamin Franklin. This seems quite possible as he was one of the original directors of the company. On February 13th, directors were elected and the first insurance company in the United States was formally started. The name of the company was the Philadelphia Contributionship. Its plan was similar to the old Hand-in-Hand of London. In fact it became quite generally known as the Hand-in-Hand because its first house mark was four hands clasping each other at the wrist. One hundred years after its organization this company celebrated its centenary. On that occasion Mr. Horrace Binney who had been a member of the board of directors for forty-one years and had held the office of chairman of the board of directors for twenty-six years stated in his preliminary address as follows:

"We began a hundred years ago with nothing but a good thought, a seed, which, when it was sown, was no bigger than a grain of mustard seed, 'less than all the seeds that be in the earth;' and at this day how many lodge in security under the shadow of the tree that has sprung up from it! A century ago not an inhabitant of this city possessed a dollar of indemnity against loss of his dwelling by fire. To-day this company insures eight millions of property in brick and stone buildings, and holds seven hundred thousand dollars of effective well-secured funds to indemnify the loss that may happen to them by fire.

"If the men who established this institution in 1752 were not the first to introduce insurance against loss by fire to houses and buildings anywhere, they were the first to introduce them into this country. After some inquiry, I am satisfied that fire insurance was not known among us before that year."

He also modestly remarks in this address that the persons who were responsible for the organization of the company were: "two or three persons of activity and esteem in the city who caused to be prepared the articles of association and agreement creating the company and declaring the terms and conditions on which they would insure." In those days these articles were denominated the Deed of Settlement. The advertisement, appearing in the Philadelphia Gazette, was published by Benjamin Franklin and D. Hall. They invited all persons who were interested to subscribe for stock in the new company. The members who contributed toward the purchase of the stock were called contributors, hence the name of the company was the Philadelphia Contributionship. In passing it might be well to remember that Benjamin Franklin, who undoubtedly lent his great mind toward the organization of the company, did not seem to take very much interest in the project and was only connected with it for the short space of two years. The minutes of the company show that he was very irregular in his attendance at the board meetings.

The real originator of the company and the one whose push and energy made it a success was Mr. John Smith, its first treasurer. He was the first person to insure in the company and it was he undoubtedly who wrote the articles of association and studied the business methods of the old Hand-in-Hand of London.

In this company all insurance was perpetual, the policy remaining on the building for the whole time of its existence, and only brick and stone houses were at first taken. The principle

back of the perpetual policy was the deposit of a sufficient sum of money, the interest on which would be sufficient to pay the pro rata share of the losses. If at any time a depositor desired to withdraw, he could take a certain percentage of his deposits. As the returns were ample and fully protected by the deposits, this company has survived the test of time and is in existence to-day. In many respects this company was one of the most remarkable ever organized in this country. As a fitting memorial to the honesty and integrity of its board of directors, during its entire existence, it has only had one lawsuit and this terminated in favor of the company.

In 1781 a dissension occurred among the board of directors which brought about the organization of a new insurance company. During a fire a dwelling house was consumed owing to the difficulty of fighting the fire because of the shade trees which stood in the front of the house. From that time on the company was very loath to take dwelling house risks with shade trees in their front. At first this was made absolute, but later they charged an increased rate of premium. A destruction of the shade trees along the streets of Philadelphia was imminent and this caused considerable friction in the board of directors. A number withdrew and in 1784 organized the Mutual Assurance Company. The badge of the new organization was a shield on which was placed a green tree, and the association was for a long time known as the Green Tree Insurance Company. The new company charged an additional rate for insuring houses with trees planted in front of them.

In 1794 a third company was brought into existence in the sister city of Baltimore. It was called the Baltimore Equitable Society, and operated upon the same general plan as that of the Philadelphia Contributionship and the Mutual Assurance Companies. We will not, therefore, take the time to enter upon the history of this company.

The insurance of dwellings must have been quite profitable to the organizers of these early companies, because we find that in 1792 the General Assembly of Pennsylvania was petitioned to incorporate another insurance company under the title of the Insurance Company of North America. On April 14, 1794 the requests of the petitioners were granted and the company was formally authorized to transact business. A very short time after this another company was also incorporated under the name of the Insurance Company of the State of Pennsylvania. Both of these companies were authorized to transact marine insurance, but before the end of the first year the directors of the Insurance Company of North America changed their articles of association so that they could transact fire insurance. A similar step was taken within a short time by the directors of the Insurance Company of the State of Pennsylvania. Insurance was to be for the full amount and two classes of risks were outlined by the board of directors. The first consisted of brick and stone houses and stores and furniture and merchandise therein; the second, houses not brick or stone, supposedly frame buildings. Provisions were also made for the insurance of a few special hazards such as tar, pitch and turpentine, which were some of the leading products of the south. For the first class of hazards 30c per \$100 was charged for a term of one year on risks not exceeding \$8,000. On risks from \$8,000 to \$16,000, 45c was charged. On the second class of hazards a flat rate of 75c per \$100 was charged.

#### *New York (1787-1846)*

The first writings that we find in regard to insurance in the state of New York is found in the minutes of the New York Chamber of Commerce held on the 3rd of April, 1770. Mr. John Thurson, a member of the board, moved that, "as there was a desire among the inhabitants of the city to have their

estates insured from loss by fire, the Chamber of Commerce take into consideration some plan that might serve so good a purpose." On May 2nd following, it is recorded that "the proposal of Mr. Thurson to take into consideration some plan for insuring houses against loss by fire be referred to a future meeting." On June 5th the subject was again taken up, but was finally dismissed and we find no record that the Chamber of Commerce took up the subject during the entire Colonial period.

The oldest company that was organized in the state of New York was known as the Mutual Insurance Company. It seemed to have been granted a charter about April 3, 1787. In 1846 it changed its name to the Knickerbocker Fire Insurance Company. The company was granted the right to transact fire, marine and life insurance. A month later there was organized another company known as the New York Insurance Company. It was granted like privileges. Three years later, March 21st, the Columbian Insurance Company of New York was organized, and on April 4, 1806, the Eagle Fire Insurance Company was incorporated with a capital stock of \$500,000. In March, 1811, the Albany Insurance Company was granted a special character to transact business. With the organization of these companies, fire insurance may be said to have been launched in the state of New York. All of the companies were granted limited charters; that is, for a term of years, usually from twenty to thirty years.

### *New England*

The earliest form of insurance in New England like that of the middle states was marine. Cities and towns in New England were situated at the head of navigation, and there was always considerable danger in cargoes passing from the ocean to the cities and the towns farther up the streams. Merchandise

was frequently lost in transit, and the importance of some means of protection was very frequently forced upon the minds of the New England merchants. The first company organized in New England for the purpose of insuring against such danger was a partnership affair and its name was the Providence-Washington. It was organized in 1799 and its long history covers the entire insurance field of New England. It was finally incorporated and its home is still in Providence, Rhode Island.

### *Connecticut*

In Connecticut the people like the rest of the citizens of New England were very poor following the close of the Revolutionary war. Business was practically at a standstill. The more important industries had been forced out of business. Credit was practically ruined. Still the indomitable character of the average New Englander was manifested in the manner in which he sought to build up the business of that section.

In 1792 there was established in Hartford a bank, called the Hartford Bank, and another in New London, Connecticut, known as the Bank of New London. As soon as these banks were established credit was given on personal property in a very limited form. Wherever there is credit, insurance naturally follows.

In 1794 two men by the names of Sanford and Wadsworth opened in Hartford an office for insuring furniture, merchandise, and other forms of personal property against loss by fire. This office like all of its predecessors, at this time, was nothing more than a partnership. It was not a corporation and was not chartered by law. To-day we have no such form of company in existence unless we call the Sun Fire Insurance Office of London such an association. This partnership seemed to have prospered, for the next year they branched out and took in more

partners. Among the numbers were Jeremiah Wadsworth, John Caldwell, Elias Shipman, and John Morgan. They called their co-partnership the Hartford and New Haven Insurance Co., and its announced purpose was the insuring of valuables, stocks and merchandise. One of these men at least was known beyond the state of Connecticut. Jeremiah Wadsworth was one of the members of the Board of Directors of a bank in Philadelphia called the Bank of North America, which was established in 1781. He was also connected with the Bank of New York which was established in 1785, and he had come to Hartford to open a bank in that city. Undoubtedly his banking business forced upon him the need of insurance, and we find that he was one of the active men in promoting insurance companies in New England.

For some reason which is not recorded Elias Shipman, one of the co-partners left the Hartford and New Haven Co. and established a separate office in New Haven which, finally, was chartered as the New Haven Insurance Co. This company had a successful career for a time but eventually retired from the field in 1883.

We frequently hear the inquiry: "Why did Hartford become a great insurance center?" It followed naturally from the class of men who early engaged in the business and also because of the fact that it was for a long time next to Boston, the financial center of New England. We should remember in this connection that wherever credit is extended in any considerable amount there insurance will be found. These different forces have made Hartford the logical center of insurance in the New England states if not in the entire United States.

In 1803 there was chartered an insurance company called The Hartford Insurance Company with a capital stock of 80,000 shares valued at \$40 each. Twenty-five per cent of this was paid in cash and seventy-five per cent was notes secured with mortgages. This was the first organized stock



company in New England and its date should be remembered. In 1825 the company was merged with the Protection Insurance Company. Its career therefore was not long enough to test the chartered stock company in comparison with the so-called co-partnership company. The object of having stock companies was to do away with the difficulties of making collections for losses. In some cases each individual partner had to be brought into court separately in order to obtain the amount of insurance which they had purchased. In a corporation this is not necessary as a corporation can sue and be sued and perform all the functions of a single individual. The importance of such an organization in comparison with the partnership form cannot be over-estimated, and there was immediately created, by the insuring public, a demand for such an organization.

About this time there was quite a large group of companies which were organized for the purpose of transacting marine insurance, but they were all destroyed by the embargo that was laid on American goods in the war of 1812. At that time our ships rotted at the docks and marine commerce was practically at a standstill. No ships laden with merchandise were allowed to be sent to England, France, Holland, and other countries of northern Europe, and likewise ships were not allowed to come to America. There was no insurance and no premiums and the business died from sheer lack of ability to carry on the commerce of the country.

In 1795 there was organized the oldest mutual fire insurance company in Connecticut. It was called the Mutual Assurance Company and was organized under a so-called deed of settlement. All the companies prior to this time had been organized with the intent of doing a considerable amount of marine business. The Mutual Assurance was the first true fire insurance company. The company never did a large business as it confined its operations to its own local city and soon passed out of existence.

*Hartford Fire Insurance Company*

We now come to the time of the organization of the Hartford Fire Insurance Company, one of the largest fire insurance companies transacting business in the United States at the present time. It was organized with a capital of \$50,000 with the privilege of increasing it to \$250,000. The articles of association declare that 5 per cent of the capital stock should be paid within 30 days, 5 per cent additional within 60 days, and 90 per cent to consist of notes secured by mortgages. The organizers of this company had everything to learn. They had no scientific system of rates. Buildings were largely built of wood and the cost of insurance and the amount of losses on such structures were unknown. There was consequently a constant fluctuation in the prices that were charged for insurance on the same character of buildings. Mr. Charles W. Burpee in his history of the Hartford Fire Insurance Company has given some very interesting instances, illustrating the rates which were charged on various classes of property, especially those relating to builders' risks. However, the company grew and they began to plant agencies in different parts of the country, but there seemed to be no system in regard to the places in which they were to be located. For instance, we find an agency located in Canandagua, New York; one in Middlebury, Vermont; one in Cleveland, Ohio; but we find none in New York City until 1821. The commissions that were paid to agents were a sort of a graded commission, although the very earliest forms of compensation to agents appear to have been a policy fee and in addition to this a per diem fee for making the survey of the property and drawing the plans of the buildings. The salaries to officials in those days were very modest. The president of this company in 1823 received only \$200. The first secretary of the company was Walter Mitchell. It was owing largely to his efforts that the company was put upon a lasting basis. He, however, offended some of the business men of Hartford

and, as a result, there was brought into existence another large fire insurance company that still exists to-day.

### *The Aetna*

In 1819 the Aetna Fire Insurance Company was organized with a capital stock of \$150,000 with the privilege of increasing it to an amount not exceeding \$500,000. Its first policy was issued August 7, 1819. It started out in its career by reinsuring the Middletown Fire Insurance Company. This was the first reinsurance transaction of which we have any record in the United States and it marks the beginning of a very important branch of the insurance business. The character of the early men engaged in the fire insurance business is well illustrated by the action of the Board of Directors of the Aetna Fire Insurance Company after the great fire of New York in 1835. At that time President Brace called a meeting of his board and announced to them that the Aetna had lost \$115,000 in the fire, and that in all probability it would wipe out the entire assets of the company. He was asked what they were to do about it.

"Do?" he replied, "go to New York and pay the loss if it takes every dollar there," pointing to the securities of the company and he added: "If it takes my entire fortune besides."

It is said that the directors pledged him their support and every dollar of the Aetna's loss was paid. The result of this policy brought the Aetna to the attention of the public in such a forcible way, that, within a short time, they had recovered their entire loss and had added a substantial amount to their surplus besides.

### *Brief Survey*

Towards the close of the century there were ten mutual and four stock companies in the United States. In 1820 there were seventeen stock companies in New York, six in Pennsylvania, two in Connecticut, one in Rhode Island, one in New

Jersey, and one in Massachusetts. In Mr. F. C. Oviatt's article printed in the *Annals of the American Academy* we find the following interesting account of the early business of insurance:

"As the business of the country developed the people began slowly to recognize the importance and necessity of fire insurance though for many years its formation was slow. The burden of the fire loss in the smaller communities was quite largely borne by voluntary contributions. A man's house or barn was burned and the owner's neighbors made up a purse which should enable him to rebuild or help him at least to get a new start and in some portions of the country this practice remained until past the middle of the century. In some of the municipalities, ordinances were enacted which compelled owners of property to have and keep in repair, leathern buckets.

\* \* \* There was quite a rapid growth of companies during the first thirty years of the 19th century which companies, as a rule, were purely local, there being only one here and there which transacted any business to speak of outside of the cities where they were located. There was but little security behind the policies issued beyond the current receipts and the good faith of the men who managed the companies."

The great fire of New York in 1835 practically destroyed all of the New York companies. As a consequence Hartford became an insurance center before New York City. The effect of the conflagration was to inspire in the minds of the officials of fire insurance companies that something must be done to meet these unexpected losses.

A question that was asked of Mr. Edwin G. Ripley in regard to the amount of profit that he was making on paper mills set him to thinking, as he had no way of determining that fact at that time. There was no such a thing as classification of risks. All the premiums were put into a common fund and the losses were paid out of it. Mr. Ripley saw the error of such a

method of keeping accounts and he organized a system of classification for the Aetna which is the earliest made for any insurance company in the United States. From this classification Mr. Ripley was soon able to determine whether the company was making any profit on paper mills or not. His system has been extended and to-day nearly every fire insurance company keeps records along these lines.

We have now come to the end of our first period. Stock fire insurance companies had been organized in Philadelphia, Hartford, New York and Boston. Those in Philadelphia, Boston and Hartford were in a prosperous condition, and, had it not been for the great fire of New York in 1835, similar conditions might have existed with the New York companies. The foundation of insurance had been laid and the formative period drew to a close. With the opening of the next period we encounter new ideas and new thoughts in regard to the fire insurance business.

## SECOND PERIOD

### *Reservations and State Departments*

The great fire of New York to which reference has frequently been made in the preceding period taught the people the need of greater security in fulfilling the contracts which fire insurance companies were making. The insuring public demanded greater security and stability in fire insurance companies. The cry then, as now, was "Safety First." It was stated then as now that a man needed his insurance only once in a life-time and that was when he had met a loss by fire. There must be no doubt about the ability of companies to pay their losses. Massachusetts in 1837 took the first step requiring companies to maintain a fund for reinsuring their contracts in force. This was the beginning of the unearned premium fund. The wisdom of such a fund has been fully demonstrated by the lapse of time. It was reasoned, then as now, that

losses must be met from earned premiums and that the entire premium could not be used for the payment of immediate losses. If a certain premium was to provide for the current losses for a year it was manifestly unsound in principle to use it all up in a lesser period of time. If the premiums are divided proportionately according to time, then the unearned portion should be sufficient to reinsure the outstanding risks of a company when it ceased to transact business. This gives stability and financial strength to the companies. Perhaps no more important step was ever taken in the history of fire insurance than that taken by Massachusetts in requiring the companies to set aside the so-called unearned premium reserve or reinsurance fund.

In addition to this it marks an important event in the history of insurance as it was the beginning of supervision of insurance companies by the state. In 1853 the New York legislature enacted a provision for an unearned premium reserve fund. By the terms of this law the reinsurance fund ranged from 30% to 60% of the unexpired premiums. In 1862 the law was amended making it 100%, or the full amount of the premiums where dividends were declared in excess of 10%. The companies found this to be very burdensome and finally it was fixed at 50%, the present amount. The New York department of insurance opposed this percentage on one year risks and pro rata for those of a longer time, declaring that it was not sufficient; but the law was allowed to stand and it has been made the basis for calculating the unearned premium in nearly all the states. Massachusetts passed through a very peculiar experience endeavoring to tax the companies a certain percentage of their premiums and depositing the amount as a safety fund in the coffers of the state. However, it failed and they are now using the 50 per cent standard.

Another effect of the great fire in New York in 1835 was the bringing into existence of a great many mutual companies. People believed that they could be more cheaply managed than

stock companies and by 1835, sixty-two mutual companies reported to the comptroller of the state of New York having aggregate assets of \$11,000,000. In 1849 a general insurance law for mutuals was enacted and immediately thereafter fifty-four mutual companies were organized. Mr. Jay Cook, comptroller of New York, in his report of 1854 stated as follows:

"The formation of a mutual insurance company upon a proper and sound basis never contemplated the taking of risks in other states than our own."

Since that time the great system of factory mutuals has sprung up and they have extended their business practically all over the United States. About this time a common fire insurance policy was adopted. Previous to this time each company made its own policies which usually consisted of a patch work of clippings derived from English and American companies.

Shortly after, the agents of different companies began to get together and to establish local boards of fire underwriters, and these in turn combined for the purpose of bringing about better conditions in regard to fire waste. This eventually developed into our so-called fire patrol of to-day.

At the beginning of the 19th century the great West was being settled and the companies found it impossible to take care of their business beyond the Alleghanies. They therefore appointed special agents to visit local men engaged in the business and to investigate the risks taken by them. This has finally developed into the so-called special agency system which is now in vogue in nearly all the states of the United States. In 1825 Mr. Robbins, who had suffered a large loss through the effects of a cyclone, went to Hartford to adjust his loss. While there he made an agreement with the Princeton Fire Insurance Co. to establish a general agency in the West. This agency was very successful and out of it grew the system which is so much used by companies to-day. The Protection Fire Insurance Co. however, failed owing to its inability to build up a sufficient surplus

and their lack of knowledge as to the character of the risks they were taking. In 1835 J. B. Bennett became general agent for the Aetna and a Western department was established. It has been said that Mr. Bennett was the first man to use a printed form of proof of loss. During this second period many mistakes were made. Some of the companies had declared such large dividends that it was impossible for them to lay aside the necessary reserve to withstand a series of large losses or a conflagration. But little co-operation was found among the companies and rate cutting was quite common. The lives of some of these companies were not long. A great many passed out of existence within a very few years leaving behind them a long list of disappointed policyholders. However, the foundation of better conditions had been laid. A system of reserves had been established; local boards and fire protection patrols had been organized; a special and general agency system for the West had been established; state insurance departments were being organized and were taking an active interest in promoting the stability of the companies. All of these were a distinct gain in the fire insurance business.

### THIRD PERIOD

#### *Co-operation (1866-1911)*

The third period in the history of the fire insurance business in the United States commences approximately with the close of the Civil war. At this time conditions were very unsatisfactory. The armies of the North and the South had competed with each other in destroying cities, towns and villages leaving nothing but waste places in their stead. All over the South during the Civil war fire insurance was in such a very unsatisfactory condition that it was practically impossible to obtain insurance from any of the standard companies. In the North where the Southern armies had not invaded this was not true. All over the New England states, the middle Atlantic and the



northern central divisions of our country the companies accepted risks and transacted their business as usual. However, the work of the fire brand was felt in many of the newer places in the West and in the cities in the eastern states. As we have stated at the close of the previous period, rate cutting was very common. Companies vied with each other in getting and accepting risks. The effect of this was that the financial condition of the companies was very unsatisfactory. Prosperity had not as yet dawned upon the companies. To make matters worse the great timber belts of the West had just been touched by the axe of the woodsman and lumber was a cheap means of building. Nearly all the towns in the states bordering the Great Lakes, including the states of the great Northwest, were largely built of wood. Brick and stone structures were very rarely reared and the modern concrete building was unknown. Steel was just beginning to be used but its use was confined largely to the very largest structures in the eastern cities. The modern fire apparatus for putting out fires was but little known and very rarely used in any of our American cities, although some of the eastern cities and the largest cities in the West such as Cincinnati, Cleveland and Chicago had modern apparatus for those days. A small fire starting in a town or village of the West was sure to sweep the entire place out of existence as nearly all of such places were unprotected.

The companies began to feel the need of co-operation among themselves in order to secure adequate rates and to promote their general welfare, especially to reduce the great waste that was occurring year by year through destruction by fires. Accordingly in 1866 they organized the National Board of Fire Underwriters. Mr. Oviatt has said in the Annals of the American Academy:

"This marked the most important change which had so far been brought about in the fire insurance business."

The man who did the most towards bringing about a union

of the companies and to make its work effective was J. G. Bennett, western manager of the Aetna. The insurance business in the United States owes Mr. Bennett a large debt for the work he did in the western field. He was one of the few who made a personal survey of the great West and saw its large possibilities.

In the West there were some men who were little known to the Eastern insurance field who were building up a conservative business in the cities of the West. Among these might be mentioned Christian Preusser and William L. Jones, presidents of the Milwaukee Mechanics Fire Insurance Company, Gustav Wollaeger, secretary of the Concordia Fire Insurance Company and Alfred F. James, president of the Northwestern National Insurance Company. These three companies were located in Milwaukee. The first of these was organized in 1852, four years after the state was admitted to the Union, and to-day transacts a national business. Starting out a few years later the Northwestern National has had a very successful career and it is now considered to be one of the stable companies of the country. The Concordia Fire Insurance Company organized in 1870 has had a slower growth. It did not commence to transact an interstate business until some time after the two other companies had extended their business into other states. The officials of these companies aided materially in solving the great problems to be faced in the West and their early experiences, as shown by the minutes of the meetings of the Board of Directors, is full of interest and constitutes a graphic narrative of the growth of the insurance business in the country beyond the Alleghanies. This is especially true of the reports of the secretaries of the Milwaukee Mechanics to the Board of Directors.

With the opening of the West there came a new factor in the method of transacting business. This was the introduction of what is known as the Daily Report. This was devised in

1867 by Alexander Stoddard, a New York agent of the Hartford Fire Insurance Company. The idea back of the Daily Report is to get good agents to select the risks, make a survey of the premises and send to the home office a description of the property, while the agent issues the policies and allows the company time to investigate the risks. If the company does not care to keep the risk they cancel it on five days' notice. This method of transacting the business became very popular and it has now entirely displaced the old method of making only monthly reports. The Daily Report implied that the companies in their home offices had some independent means of obtaining information in regard to each individual risk insured. If a company did not have this means at hand the agents could unload all of their poor risks upon the company, reserving to those who had proper facilities for obtaining the desired information, the better class of risks. This opened at once a wider field for the special agent. He visited the local agents and with them made the round of the different buildings insured and determined whether it would be best for the company to carry the risks or not. In fact he became the representative of the company in the field. This special agency system became quite expensive and it was finally thought best to try and devise a more inexpensive system. In the Western office of the Aetna there was employed a civil engineer by the name of William H. Martin who had a great deal of ability in the drawing of maps. He conceived the idea that it would be possible to put a great deal of detail information about cities and towns and the nature and character of the structures therein upon maps.

Accordingly the Aetna on June 1st, 1856, copyrighted the first fire insurance map in the name of the Aetna Insurance Co. Previous to this time crude drawings of the towns and cities in the West had been made by special agents but these were practically of no value except in showing the number of risks that

a company carried. An assistant of Mr. Martin's by the name of D. A. Sanborn saw a great future in the map business and he endeavored to get Mr. Martin to go to New York and establish a map-making business but Mr. Martin was faithful to the Aetna and stayed with the company until the date of his death which occurred in 1903. Mr. Sanborn however went to New York and established a very important map-making establishment and a branch in Chicago.

The importance of maps in the fire insurance business cannot be over-estimated. Without them companies could not to-day transact business along the lines which they are doing. The Sanborn Map Company supplies the companies with maps which give in detail all the information that is needed to determine whether a risk is a good or a poor one outside of the moral hazard. These maps are kept up to date by a very extensive system of surveys. Changes taking place are constantly noted upon the maps.

During this period there occurred the establishment of the Pacific Coast Division. This was done through the energy of the officials of the Phoenix of Hartford. They visited the Pacific Coast, noted its possibilities and finally in 1862 established a Pacific Coast Department in charge of R. H. McGill.

Just as the National Board of Fire Underwriters began to grapple with some of the great problems which lay before them, there occurred the great fire in Chicago in 1871. This fire destroyed 17,430 buildings and property worth over \$168,000,000. About this time, as the companies were recovering from this blow, Boston in 1872 suffered a severe loss by fire and approximately 1,776 buildings were consumed and over \$75,000,000 of property was destroyed. The National Board saw at once that something must be done to prevent these great conflagrations. In order to save the companies financial disaster, rates were sharply advanced and a campaign was organized for the purpose of bringing about better con-

struction. At this time the Mansard shingle roof was very stylish but they were fire traps for spreading flames during a large fire. Competent architects and engineers were employed to lay out plans for buildings and great improvement in structures became marked in a very short time.

In 1874 the state of New York required the companies to report in their annual statements the amount of unearned premium liability. This greatly decreased the surplus of the companies. At the same time the amount of assets was diminished by deducting therefrom certain items that would not come under the provisions of the investment laws of the state. This was a very important step as it required the companies to lay aside a large part of the funds which they were accumulating from their recent increase in rates. This promoted stability and financial strength.

The period covered from 1874 to 1880 is known as the time of demoralization. The increased rates was the indirect cause of the organization of a large number of irresponsible companies. They entered the field with the expectations of making large profits which were not to be obtained in the fire insurance business at this time. Some were organized simply for making gain out of promotion schemes. In either case the disappointment of the stockholders was great and there was a large number of failures and withdrawals from business during this time.

In April 1877 to make matters worse the National Board of Underwriters stopped making rates and the local boards were required to perform this function. The immediate result of this was a sharp falling off in rates, as the local agents vied with each other in getting risks at almost any price for the sake of the commission on the premiums. The local agents of every company were making rates to suit their own convenience and each company began to prey upon the business of the others. In a very short time the profits of the companies had dropped to such a low point that it became simply a struggle for the sur-

vival of the fittest. It was perfectly self-evident that unless something be done the very existence of fire insurance would be threatened. In these days of extended credit such a thing could not be allowed. Some means must be found to produce better conditions. The ratings of the National Board through the state boards and local boards had been a great improvement, and it became evident to the officials of the fire insurance companies that no backward step could be taken. All other financial institutions were tending towards stability and prosperity and the question became an important one whether the fire insurance business should be the only one to take the downward course.

Just about this time the special and general agents of the companies began to work upon the problem and in a short time various associations were formed tending towards co-operation and betterment of conditions.

In 1872 the New York State Association of Supervising and Adjusting agents was formed. This was followed in 1881 by the Underwriters Association of the Middle Department. Two years after this two important associations in the East were formed. They were called the Underwriters Association of New York State and the New England Insurance Exchange. Just before this however in 1882 the Illinois State Board of Fire Underwriters framed their articles of organization for the purpose of aiding the companies in the middle West, more particularly in Chicago and the state of Illinois. The fundamental principle back of all these associations was co-operation, rate-making and the adjustment of losses. In addition to this, in order to work out the principle of co-operation it was necessary to have a set of organizations which would dove-tail into each other. The scheme which was finally worked out began with the problem of the local boards. If the problem could not be solved at this place it went to the Special Agents, from the Special Agents to the Field Men's organization and finally

to the organization of the companies. Among the organizations of the companies two were formed to complete the system of co-operation. The first was organized in 1879 and is known as the Western Union, the second in 1882 is known as the Southeastern Tariff Association. Just prior to this time however the Pacific Coast established the Fire Association of The Pacific Coast. In reference to the organization of what is known as the Western Union, or more popularly called "The Union," I am pleased to quote from a pamphlet prepared by W. N. Johnson at present Western manager of the Insurance Company of North America. In speaking of the Western Union he says:

"In 1879 the situation had become so grave in the field commonly known as the Western states, that a meeting of the managers of the companies operating therein was called and an association was formed which has existed from that time to the present, and, as a statement of its purposes will apply equally to similar organizations in other parts of the country, reference will here be made only to the associations so formed and known as 'The Union.' This association was formed to meet a crisis in the insurance business when the conditions brought about by unreasoning competition had caused the failure or retirement of many companies and imperiled the very existence of many others. Rates had been reduced below the paying point, and the expenses of the business had been enormously increased. Realizing that if the insurance companies were to survive and to meet their loss obligations reforms must be promptly instituted, these managers representing less than one-half of all the companies engaged in the business in the West, courageously resolved to devote their energies to restoring the business to a sound financial basis and to regaining the confidence and respect of the public, which had well nigh been lost. This association, thus organized, has been in operation ever since and during the twenty-six years of its existence has been and still is the expo-

nent of everything which conduces to sound and healthy underwriting. It cannot claim to have made no mistakes, but it has always had in view these fundamental ideas: First, absolute indemnity to policyholders; second, economy in management; third, reduction in the fire waste; and fourth, equitable rates."

A great advance was made in the policy contracts of the companies during the early seventies. During this third period, while there was a great deal of confusion in regard to policy forms, still the tendency was toward a more uniform wording of the contract. In 1873 Massachusetts took the initial step and provided for a standard policy. This was made obligatory in 1880 upon all the companies operating in the state. Three years after this time New York adopted a standard form which likewise became operative on all companies transacting business in the state of New York on January 1, 1887. These two policy forms marked a great advance in the business. Business men as a whole do not take the time to read the conditions of their policies and many of the policy forms of those days could not have been understood outside of the legal fraternity even though they had been scanned with care. Each company writing a different form of policy and several companies carrying insurance on the same risk caused an endless amount of delay and confusion in the settlement of losses. These conditions were greatly improved by the adoption of a standard form of policy. The New York form which went into effect in 1887 was thought by most of the companies to be superior to that of Massachusetts and it has since been adopted by nearly all the states. The meaning of the various clauses in the policy have since that time been interpreted by the courts and the relation of the insured and insurer is no longer a question of speculation. However in the adoption of the New York form by other states some changes have occurred which have had a tendency to make it a partly local contract. It would be in the interest of



the insured as well as the companies if some one standard form could be adopted and adhered to by all the states.

About this time the organization of the Mill Mutuals was undertaken by heads of factories who were dissatisfied with the present conditions of the fire insurance business. They started out upon the new theory that it was cheaper to prevent fires than to pay losses. In consequence they developed a thorough system of inspection and the use of fire prevention apparatus. Chief among the latter equipments stands the automatic sprinkler. The theory adopted by these mutuals was successful in practice and large dividends were declared to policyholders.

To compete with the Mill Mutuals several stock companies, in 1890, organized the Factory Insurance Association. They endeavored to make a thorough inspection of all plants which they insured, showed the superintendents and owners the possibilities resulting from better construction and made deduction of rates for installing fire prevention apparatus. In the West a similar organization was formed and now the stock companies give the same service to owners of factory plants that is rendered by the so-called Mill Mutuals. In 1896 the National Fire Prevention Association was formed and in the work of construction and educating the public up to the necessities of preventing loss by fire it has done more than all other forces together. The subject of fire prevention is a complex one and includes sprinkler construction, water supply, electrical wiring and other modern inventions and installation which has caused an increase in the fire hazard.

The subject of rating which depends upon the nature of the risk has always been a very complex one. Buildings vary so much in their material and the manner of their construction. The cities and towns in which they are built also vary as to the water supply and there are a great many features which have

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to be taken into consideration in addition to these in attempting to fix rates in a modern city.

In 1893 Mr. F. C. Moore brought forth a work which was known as *The Universal Mercantile Schedules* which was used for a number of years as the basis of making rates. Just preceding the close of the century A. F. Dean produced another revolution in rate-making by putting forth his *Mercantile Tariff and Experience Formula* for measurement of fire hazards. These subjects will be taken up more fully in another part of this work.

It would be unjust to the companies to close the third period without making mention of some of the adverse legislation which has seriously affected the business of the companies.

In 1885 the state of New Hampshire passed the first valued policy law. This prevented the companies from questioning the over-insurance of buildings, or making any inquiry in regard to depreciation of such form of property. Some of the other states of the Union have made similar laws, many of which have been repealed. It was found that the valued policy law in nearly all cases caused an increased rate for insurance.

Among the forms of adverse legislation, mention might be made of the laws to prevent co-operation among the companies known as *Anti Compact Laws* or *Anti Trust Laws*. Co-operation in the fire insurance business is absolutely essential to its well being and continued existence. We have already seen in this brief history the effects of each company endeavoring to stand alone. As the business is now conducted all attempts in this direction must end in a demoralization of the business and a weakening of the confidence of the people in the insurance business. Since co-operation is so essential to the success of the business the question is now being asked why not frankly recognize this fact and control it for the good of the companies and the public. Some states, notably Wisconsin, have been taking

up this question in earnest and undoubtedly a solution will be found for the problem.

The taxation of fire insurance companies, beginning in very small amounts has increased greatly during this third period of our history. As the needs of the state governments increased they levied larger taxes upon the companies. Toward the close of this period about twenty-six features of the business were taxed. There seemed to be no uniformity in regard to the method of taxing the companies nor in the particular feature to be taxed. With the taxes, losses, and expenses increasing, and the rates on the downward trend, any extra burden placed upon the companies is seriously felt.

Toward the close of this period a new factor in the fire insurance business was introduced by the formation of interinsurers associations in the city of New York. John R. Walters mutualized the Lloyds system of transacting the fire insurance business and applied it to larger merchantile risks located in the Atlantic coast cities. He is said to be the Father of interinsurance in the United States. From New York the business was carried to Kansas City, Missouri, by Mr. Bruce Dodson, and Kansas City has become the center of some of the most prosperous interinsurers associations in the United States. On account of the prejudice of the departments against this form of insurance, it has had a very hard and difficult time in planting its methods of transacting business in the different states.

In closing this period we find the companies upon a higher plane than ever before. Policy contracts had become uniform, and co-operation among the companies had resulted in the formation of many societies which were doing much to elevate the business. Schedule rating had been adopted or was being adopted by all the companies. Construction in the cities had been vastly improved and the wooden and frame buildings were giving way to more substantial forms of structures. Fire pre-

vention was beginning to be an important question among insurance men which led to the formation of the National Fire Prevention Association. Although there had been some adverse laws and taxes were on the increase, still the fire insurance business had grown and prospered even in the face of these. While some mistakes undoubtedly had been made and there had been some cases of mismanagement of companies, still they retained the confidence of the people.

During this period properly belongs the great conflagration which destroyed San Francisco. An earthquake, which preceded the fire, ruined the water mains and made it impossible to use the fire apparatus of the city, and it swept with unabated fury over the wreck caused by the earthquake. A large part of the down-town section, and nearly all of the palatial residences that crowned Nobs Hill were burned. It has been estimated that \$350,000,000 worth of property was destroyed. No other conflagration in all history had equalled it. It taxed to the limit the stability of the companies to pay their extraordinary losses. It has been said that, if the fire insurance companies had been required to render a financial statement thirty day after the fire, a large number would have been found to be insolvent. With the savings of years swept away and with greatly depleted surplus, the companies bravely faced the problem and stood the drain upon their resources. The manner in which they managed this tremendous diminution of their assets is reflected in the fact that nearly all of those companies which lost so heavily in this conflagration are still transacting business in San Francisco.

With the great conflagration of San Francisco, this period draws to a close. The public mind and especially insurance department officials were in a state of unrest. The investigation of life insurance companies by New York and Wisconsin aroused the people in all sections of the country to the supposed evils that existed in that form of insurance. Many believed

that if similar investigations were made in the fire insurance business they would uncover evils equally as great. A period of repression and investigation was inaugurated. The methods of transacting business, and especially the assets, were scrutinized with the greatest care. New York, Massachusetts, Wisconsin, Ohio and South Carolina had especially strong insurance departments. The height of the investigation was reached when State Superintendent Wm. H. Hotchkiss of New York found that the management of the Phenix of Brooklyn had squandered the funds of that company and that it was practically insolvent. Almost as soon as the news of the condition of the Phenix became known, arrangements had been made to re-insure its policy contracts in the Continental Fire Insurance Company. The assets were finally, however, consolidated with the Fidelity Insurance Company of New York, forming the Fidelity-Phenix Insurance Company. Outside of the Phenix, the fire insurance business was exceptionally clean and free from evils. Publicity through reports of examination restored confidence, but the way had been paved for those who believed in government insurance to become more insistent in their demands. This was heightened by the fact that the companies had not solved the question of just and equitable rating of risks and the prevention of discrimination among insureds. Besides, the companies had fought very bitterly the regulation of rates by the states. These great questions were uppermost when this period may justly be said to have been brought to a close.

#### FOURTH PERIOD

##### *Growth of Government Insurance (1906)*

Government insurance is not a new institution. As we have seen in the early history of insurance, fire guilds, called Brandgliden, were formed in Germany. These were mutual fire insurance associations on the state or municipal plan. One of

the most noted embraced a large part of the city of Hamburg. It was the outgrowth of the Fauer Casse formed during the fifteenth century. Berlin also had a similar institution and nearly all the provinces of Germany had public fire institutions. To-day there are a number of provincial, municipal or state institutions still in existence. Some restrict their business to a single city, some to a province, while others embrace the whole kingdom. At one time the state institution had a monopoly of the business, but since 1861 the public institutions have been obliged to compete with private companies. There is no longer any state, provincial or municipal monopoly of insurance in Germany.

Austria-Hungary has fire insurance institutions very similar to Germany. Some of these local institutions have been in existence since 1710. To-day there is no state monopoly of fire insurance. There are eight stock companies competing with state institutions for the business. In spite of the state forms of insurance the stock companies have grown and prospered.

Originally Switzerland had a form of private insurance. In 1805 there commenced a change for public insurance by the Canton, the political unit. During the middle of the 19th century many of the cantons had taken over the fire insurance business and the larger number made it compulsory. Gradually the compulsory features have been abandoned and to-day Switzerland has stock companies, mutual associations and cantonal public fire insurance.

In Denmark the communal form of fire insurance was established during the 17th century. Prior to this they had local associations similar to the Brandgliden of Germany. During the middle of the 18th century fire mutuals were formed which were afterwards taken over by the government which later formed an institution for compulsory insurance in the cities. This was enlarged until it governed the whole island of Seeland

except Copenhagen. At present the compulsory features have been largely displaced through the press of public opinion. There are public insurance, free mutuals and stock companies all transacting business side by side in this small country.

The earliest form of fire insurance in Sweden consisted of small associations for protection against fire, storms and floods. These were gradually succeeded by a large number of free mutuals with very limited extent of territory. They did not succeed very well and were replaced in turn by a form of public insurance in Stockholm. Since 1829 Sweden has had a special institution for insuring country buildings. Stock fire insurance, public insurance and free mutuals are to be found in Sweden. Compulsory features have been abandoned to a large degree.

As early as the middle of the 18th century Norway had a state institution for fire insurance which transacted business throughout the kingdom. This was made obligatory, but gradually this feature has been given up. Christiania had a form of municipal insurance, but in 1827 accepted the state form. At present the state form is divided into two parts, one for town risks, and the other for city risks. Lately there have sprung up several stock companies which have done a thriving business in competition with the state institution.

The earliest institution for insuring risks against the danger of fire in Russia was the Imperial Bank. This was followed by other forms of fire insurance. Mutual fire insurance associations were established in 1864 through an imperial decree. These were under the supervision of the governor of the province. Some form of fire insurance was made obligatory on all dwelling house property. In Russia to-day the stock companies, mutual associations and provincial associations all transact business. Owing to the unpopularity of the provincial government the stock companies have lately been in public favor.

As we have seen, in England the stock form of insurance

company early gained the ascendancy and the government did not enter upon any system of fire insurance. The stock companies served the people fairly well and they were satisfied. Then again it was a characteristic of the English people not to have any highly centralized form of governmental institution. They did not believe in having the government do anything which they themselves could do well. The English system was planted in America by the English colonists. Only one attempt at municipal insurance was tried. The city of London in 1681 attempted to organize a municipal form of insurance, but it was abandoned because of the opposition of the stock companies and the disinclination of the people to insure their risks in such an institution.

One of the most conspicuous examples of state fire insurance is found in New Zealand. In 1903 the government of New Zealand resolved to try the experiment of engaging in the fire insurance business. At that time there were twenty-six fire insurance companies transacting business in the colony, and many of these were powerful corporations from England and Australia. It was the opinion of the committee selected by the general assembly after hearing all the evidence that a new element of competition should be introduced. It was pointed out that improved water supply and fire service was being provided in localities by the municipality where the government had entered with corresponding reduction in rates. It was believed that this would be equally true with fire insurance. It was also asserted that four-fifths of the profits made out of the business in New Zealand was shipped out of the country. On the other hand the fire companies showed that from 1899 to 1903 they had paid approximately \$6,000,000 for losses and that they had received only about \$3,000,000 more in premiums. The state life insurance scheme established in 1869 had been very successful and the general assembly concluded to organize a



State Fire Insurance Office. All forms of compulsion were dropped from the plan.

The law establishing the State Fire Insurance Office confined the business of the office to insuring property within the boundaries of the colony of New Zealand. It provided for the appointment of a General Manager and Staff who were not to be members of the ordinary civil service or subject to its rules. The board consisted of the colonial treasurer, the government life insurance commissioner, the general manager and two unofficial members. The first colonial treasurer was Mr. Seddon, and the government life insurance commissioner was Mr. Richardson. The law further provided that half the net profits of the business were to go to the creation of a sinking fund and the other half should be equally divided between the insured and the reserve fund. The return to the insured was to be made in the form of bonuses divided on a basis proportionate to the premiums paid.

As soon as the law authorizing the state fire insurance office went into effect the public displayed an abundant willingness to avail themselves of the new means of getting insurance. During the first nine months of the life of the office it took in premiums amounting, to about two and one-half million pounds. Since the establishment of the fund great pressure has been brought to bear upon the assembly to abolish it, but the people are so much in favor of it that it is doubtful if the law will ever be repealed.

In 1907 Italy entered upon a scheme of compulsory life insurance. The business of the rival insurance companies transacting business was taken over by the government. The general plan followed out these fundamental lines:

1. There was to be a national insurance institution possessing civil personalty and in that capacity having the right to control its own administration. The insurance policies issued by

the institution were to be guaranteed by the state in case the institution had not sufficient funds to meet its engagements.

2. The national institution has the monopoly of life insurance and transacts every possible kind of business. All companies transacting life insurance business in the kingdom could not claim from the state any guarantee or compensation or indemnity in consequence of the application of the law.

3. The administrative authorities of the institution consisted of a board of management, the general director, the syndics, the employes and the agents. The board of management is composed of state officers and other members who have given proof of their technical and administrative capacity in insurance matters. The general director represents the institution and enforces the decisions of the board of management. The syndics present an annual report on the work of the institution, examine the balances and communicate with parliament every three years. The employes are both administrative and technical. The agents are remunerated in proportion to the number and amount of transactions they conclude. The law gives the institution the power to employ postmasters, notaries and municipal employes as agents. The funds are largely invested in the consolidated public debt of the kingdom of Italy, securities guaranteed by the Italian states, and in the acquisition of real estate. While this law does not directly affect governmental fire insurance institutions, still its influence was very great. It is the most conspicuous example which we have of monopolistic state insurance.

The influence of European institutions has always been considerable upon similar institutions in the United States. This is due to the fact that the people who live in the United States have largely come from northern and central Europe. They are used to the institutions there and they desire to transplant the same forms here. In addition to this, transportation has

made the study of European forms of government very easy, and scholars and literary men are constantly crossing the ocean to study and scrutinize them and bring to the people of the United States, through the schools and the press, new forms of public institutions.

The subject of insurance has lately been studied very carefully in all parts of the world in connection with the relief of the laboring classes and provision for doing away with pauperism. Many believe that the state should be as much interested in life insurance and its kindred forms as in any other form of public service. All of these things have had a direct influence in bringing about a persistent manifestation in favor of government insurance.

In addition to the influence of European thought on the subject of insurance, there has lately sprung up in the United States a strong political party which believes in the government entering into competition or taking over any industry that becomes monopolistic in its tendency. If this be not socialism, it is strangely akin to it. This political faction have advocated very strenuously for state insurance and they have brought considerable influence to bear upon legislative bodies to enact laws along these lines.

Since the organization of workmen's compensation laws several states have gone into the business of liability insurance by organizing state funds. This has been largely brought about through the voice of the laboring people and a desire on the part of public men to conserve the interests of beneficiaries and to compel the industry to bear the burden of work accidents. In addition to this, some of the states have organized insurance funds for the purpose of insuring the property belonging to the state. One of the earliest states to enter in upon this form of insurance was the state of Wisconsin which organized a state insurance fund in 1903, the year that New Zealand adopted

a state fire insurance plan. The fund had scarcely been organized before the state capitol, the most costly building owned by the state, was burned and the fund met a severe set-back. After that it had a very successful career, the losses being very small. Gradually the state enlarged its business to cover county buildings and public school property; and a plan was put on foot to amend the constitution so that any form of insurance might be transacted. The constitutional amendment was voted down by an overwhelming majority and the legislature of 1915 came very near repealing the entire law. The main argument used against the fund was that it promoted incendiarism. Whether this was true or not no one will be able to say, but the state has suffered very heavy losses from fire during the last few years of the life of the fund. On the other hand it was argued that the state had saved nearly a quarter of a million of dollars since the fund was organized and that it had given inspection service of a very high quality. During the last year Pennsylvania voted a large sum to organize a similar fund. New York, Ohio and Oregon have workmen's compensation funds. In addition to this Wisconsin, through the efforts of Herman L. Ekern, Commissioner of Insurance, organized a state life insurance fund for the purpose of carrying on an old line insurance business with out liability on the part of the state.

In 1907 the state of Tennessee had the question passed upon by an insurance investigating committee. Mr. I. L. Pendleton, chairman of this committee, has summed up very ably the arguments for and against state fire insurance. They may be stated as follows:

1. Every policy will be guaranteed by the state.
2. The reserve fund will be invested in the state and thereby benefit both the state and the policyholders.
3. The state could conduct the business on a less expensive ratio and therefore premiums would be less than those now charged by individual companies.

4. By collecting the premiums at the same time and in the same manner as state taxes, the large commission item could be avoided.

5. The state could punish incendiaries more rapidly than companies and would thereby reduce the fire waste.

6. The state could fix a standard of valuation both for taxes and insurance at the same time and thereby correct two evils.

These are the reasons for state insurance, and they are almost unsurmountable. The principal objections to the undertaking by the state are as follows:

1. If the state guaranteed the payment of any loss or of losses it would be very hazardous to the state and injure insurance credit.

2. It would be the highest form of paternalism, with a strong tendency toward socialism.

3. The fire insurance business has been almost a losing venture for the past twenty years and the state ought not to engage in so hazardous a business.

4. All insurance is more or less mutual in its nature, but if a state should go into the fire insurance business every citizen in the state would be a guarantor behind the venture whether he desired to insure with the state or not, and it would not be equitable.

5. The insurance business requires men who are specially qualified and trained for that particular work in order to make a success of it, and that, in a popular form of government where the officers change every two years would be the exception rather than the rule.

6. It would be putting the insurance question into the politics of the state and favoritism would be practised.

7. The state would necessarily be compelled to limit the number and size of its risks or reinsure with other companies which it could not do if it lowered its prices below the price of the companies.

8. If the state took only a limited number of risks it would not have general business enough to strike a proper average and its rates would be entirely problematical and possibly be set too low for safety.

9. If the state went into the fire insurance business, it would not discriminate against one of its citizens and favor another and hence would have to serve all alike whether it be for the interest of the state to do so or not.

10. If any citizen was dissatisfied with the amount offered him by the state in case of loss he would be at his rows end, as he could not sue the state and that would breed discontent and dissatisfaction among the people who had losses.

11. Those who favor state insurance offer no substitute for the loss of jobs to thousands of men who are now earning an honest living in the insurance business.

12. The state ought not to discriminate against insurance companies and in favor of other industries.

13. The state ought not to do for the people what they can do well for themselves.

As we have seen in Europe the compulsory and monopolistic features have gradually been changed so that private companies are now competing with state, municipal and provincial fire insurance institutions. If one were to judge the movement by the results it would seem that state insurance was growing less popular in Europe than formerly. However that may be, in the United States the reverse is no doubt the case. Every session of the legislature sees some form of state insurance enacted. Whether the results will meet the expectations of its advocates remains a question for the future. From the present outlook it would seem that if state insurance is to be inaugurated in this country, it will not be due to excessive profits made by the companies but rather to a failure to bring about just and equitable rating of risks and discontent with the management of the companies.

*Legislation Since 1906*

During this period Kansas in 1909 passed a law compelling fire insurance companies to file their general basis schedules with the superintendent of insurance, and no change could be made in them unless notice of the proposed change was filed with the superintendent of insurance ten days before such change was to go into effect. In special cases the superintendent could make a change within less than ten days. This law also stated "When the superintendent of insurance shall determine that any rate made by an insurance company in this state is excessive or unreasonably high, or that said rate is not adequate to the safety or soundness of the company granting the same, he is authorized to direct said company to publish and file a higher or lower rate, which shall be commensurate with the character of the risk, but in every case the rate shall be reasonable." This statute gave the superintendent of insurance the power to pass upon the rates of fire insurance companies. The right of the state to make such a law was carried to the federal supreme court and very recently was decided that the state was acting within its jurisdiction when it passed such a law.

In addition to the right of the superintendent of insurance to pass upon rates, the law also carried a provision against discrimination between insurants of the same class. It also made provision for an appeal from a decision of the superintendent of insurance to the courts in case the companies or the insured were dissatisfied with the rate proposed by the department of insurance.

For a time it was thought that the Kansas law would solve the problem of rate cutting, rate discrimination, and excessive rates; and its influence upon other states was very great.

In 1910 Louisiana and Texas passed laws making provisions for state rating boards which should make and promulgate all rates. The law in Louisiana was repealed in 1912

and the Texas law was considerably modified in 1913. In 1911 the Texas State Insurance Board issued a complete schedule of basis rates. It was modeled after the Moore's Mercantile Schedules, and cannot be said to be a distinct contribution to the subject. However, as these rates were applied to individual risks by the state rating board they have been of considerable interest. Massachusetts made in 1911 provision for a board of appeals to test all matters affecting excessive rates. Missouri passed a stringent law in regard to policy rates and anti-discrimination features in the same year, but the act was repealed in 1913. A large number of states in 1913 passed laws requiring the companies to file basis schedules of rates, the examination of bureaus by the department of insurance, and anti-discrimination laws. Among these were New York, Washington and West Virginia. These were undoubtedly the outgrowth of the agitation of the rate question which was commenced in Wisconsin through the leadership of Herman L. Ekern, Commissioner of Insurance. In the report of the Wisconsin Legislative Fire Insurance Investigating Committee which was dictated by Commissioner Ekern in the early part of 1913, he advocated voluntary inspection bureaus to fix rates or schedules which should be under the supervision of the commissioner of insurance, the companies being compelled to file basis schedules with the department of insurance and the commissioner of insurance having the right to pass upon the reasonableness of rates. Although these measures were largely defeated in Wisconsin their effect upon other states was notable.

In closing this period it is not too much to say that Commissioner Herman L. Ekern of Wisconsin was undoubtedly the foremost figure during this period. He advocated state insurance, both fire and life, government supervision of rates of fire insurance companies, the prevention of fires through construction and building codes, the adequacy of rates of fraternal benefic-



ary societies and stringent management of life and fire insurance companies. In the originality of his writings as shown in his reports, and the vast amount of labor which he expended upon them, he stands out prominently among the heads of insurance departments when Cutting and Hardison of Massachusetts; Hotchkiss, Emmet and Hasbruck of New York; Young of North Carolina; Mansfield of Connecticut; Barnes of Kansas; Button of Virginia; Palmer and Winship of Michigan, and Potts of Illinois formed a brilliant coterie of insurance men.

The question of rates was the foremost question during this period; both the companies and the departments were earnestly striving to solve the problem, but without success. The one was in opposition to the other. The companies advocated that the rates were barely sufficient to pay losses, expenses, and a reasonable dividend upon their capital, while the departments claimed that enormous profits were being made, and many were even advocating state insurance to settle the question. The west was the battle ground for government supervision of rates and for state insurance. It set up the cry that large sums of money were unnecessarily being shipped to the east to pay large dividends on stocks of fire insurance companies owned there. Just as this agitation was at its height, the National Board of Fire Underwriters took hold of the problem and Mr. E. G. Richards, Chairman of the Actuarial Committee of the National Board, issued his book on "Experience Rating and Grading Schedules." This system of rating proposed to revolutionize the subject and to base the rates of fire insurance companies upon their experience. With the issue of Mr. Richard's book this period may be said to have been brought to a close as the agitation of government insurance almost ceased and the departments of insurance dropped, for a time, at least, the agitation of the rate question.

## CHAPTER IV

## FEDERAL SUPERVISION OF INSURANCE

From the time of the organization of the first insurance company down to the year 1864, the right of the several states to have supervision over insurance companies was never questioned. Nearly all of our large insurance companies to-day had their early beginnings under the protection of insurance departments located at the seat of government in the different states. During the year 1864 the federal congress passed a national banking act. This act made provision for the organization of national banks which should be under the supervision of the federal authorities. In the month of November, 1864, following the passage of the bill, the Wall Street Underwriter suggested that congress ought to give insurance companies the right to do business all over the country without restriction from the states. In 1865 a number of companies presented a memorial to congress asking protection from many of the burdens of state supervision. A legal opinion was secured from Chas. Tracey, Esq., of New York City, that insurance was necessary for the carrying on of commerce, in fact was an essential part of commerce itself, and ought to be regulated and made uniform by congress.

The right of congress to legislate on the question of the regulation of commerce was derived from its power under subdivisions 3 and 18, of section 8, of article 1, of the Federal Constitution, which states:

"The congress shall have power (sub. 3) to regulate commerce with foreign nations and among the several states and with the Indian tribes; (sub. 18) to make all laws which shall be necessary and proper for carrying into execution the foregoing powers and all other powers vested by this constitution in the government of the United States or in any department or officer thereof."

In the specific powers granted to congress there seems to have been no provision made for the regulation of insurance by federal authorities. Further, there seems to be no clause in the constitution granting the right of congress to pass laws on this subject unless it can be made to appear that insurance is interstate commerce.

Mr. Frederick H. Nash, Asst. Attorney General of Massachusetts, in an address before the National Convention of Insurance Commissioners, September 27, 1905, has developed quite clearly this feature of the question. He says:

"It has been suggested from time to time that just as congress established a system of national banks, outside the jurisdiction of the states, and has made a uniform bankruptcy law, which supersedes the insolvent laws of the states, congress may pass uniform laws for the regulation of insurance. It is said that uniform insurance laws are as essential to the commercial interests of the country as national banks and uniform treatment of creditors. It may be so. There is, however, no analogy under the law between these matters and insurance. The constitution of the United States provides expressly for bankruptcy, and since it gives to congress control over the currency and power to borrow money, there is necessarily implied the power to regulate banking institutions and issue legal tender notes. The power of congress in these respects is derived not at all from the power to regulate commerce.

"It is beside the point, therefore, to reason from them to in-

surance, of which congress can have no control unless under the interstate commerce clause. Congress cannot establish an insurance company except by allowing one to be incorporated under the laws of the District of Columbia, such a one has no higher standing than a corporation created by the laxest state. The federal government does not need insurance in its business; indeed, it is against public policy for the government to insure its property, as a loss would be distributed among a smaller number of people than if it were allowed to remain upon the whole body of contributors to the support of government. The argument seems to me far-fetched, that because insurance companies may loan money to the government, therefore they may be created and controlled by the government, like a national bank.

"Unless the business of insurance is commerce, congress has no more power to regulate it than to regulate state banks. Each state may refuse to admit an insurance company of any other state, and hence may admit it upon any terms that it sees fit to impose."

The question as to whether insurance was interstate commerce was passed upon by the supreme court in the famous case of *Paul vs. Virginia*, decided in 1869, which involved the validity of an act of the state of Virginia requiring the payment of license fees by the agent of foreign insurance corporations doing business within the state, not required of agents of domestic corporations. The supreme court held that insurance against fire was not interstate commerce, and hence was not in conflict with the federal constitution.

Chief Justice Field, who delivered the opinion of the court, summed up the whole question in the following language:

"The policies are simple contracts of indemnity against loss by fire entered into between the corporation and the insured, for a consideration paid by the latter. These contracts are

not articles of commerce in any proper meaning of the word. They are not subjects of trade and barter offered in the market as something having an existence and value independent of the parties to them. They are not commodities to be shipped or forwarded from one state to another, and then put up for sale. They are like other personal contracts between parties which are completed by their signature and a transfer of the consideration. Such contracts are not interstate transactions, though the parties may be domiciled in different states. The policies do not take effect—are not executed contracts—until delivered by the agent in Virginia. They are, then, local transactions and are governed by the local law. They do not constitute a part of the commerce between the states any more than a contract for the purchase and sale of goods in Virginia by a citizen of New York whilst in Virginia would constitute a portion of such commerce.”

The language of Chief Justice Field has so clearly enunciated the principles back of the argument that insurance is not commerce that the supreme court has never seen fit to depart from the conclusions expressed in the opinion. It has been argued by those who are in favor of the federal regulation of insurance companies that this decision did not test the question. The court simply passed upon a question of state government and it did not declare any act of congress on this subject invalid. There are many who believe that, if the supreme court of the United States were brought face to face with the question of whether insurance could not be regulated through federal supervision after the passage of such a law by congress, it would not follow the laws laid down in the case of *Paul vs. Virginia*, but that, under the implied and resulting powers of the constitution, such a law would be declared constitutional.

The question came before the supreme court again in 1895, in the case of *Hooper vs. California*. The friends of federal

supervision thought that if fire insurance was not interstate commerce, marine insurance, which was very closely related to interstate commerce, was unquestionably a vehicle of commerce. Mr. Justice White, one of the ablest jurists that ever sat on the supreme bench, delivered the opinion which is summed up in the following language:

"The contention here is, that inasmuch as the contract was one for marine insurance, it was a matter of interstate commerce and as such beyond the reach of state authority, and included among the exceptions to the general rule. This proposition involves an erroneous conception of what constitutes interstate commerce. That the business of insurance does not generically appertain to such commerce has been settled since the case of *Paul vs. Virginia*. The business of insurance is not commerce. The contract of insurance is not an instrumentality of commerce. The making of such a contract is a mere incident of commercial intercourse, and in this respect there is no difference whatever between insurance against fire and insurance against 'the perils of the sea.' "

The friends of federal supervision were very much disappointed at the attitude of the court. Gradually an extensive literature on the subject was brought forth. Many believed that insurance would be greatly benefitted by a change of supervision. Some of the ablest talent in the country was employed to educate the people as to the importance of the subject and to arouse congress to the necessity of passing a law bringing the insurance companies under the department of Commerce and Labor which had been established in 1903. The question was again carried to the supreme court in the now famous case of the *New York Life Insurance Company vs. Cravens*. The question involved the right of a resident of Missouri to make with the New York Life Insurance Company a contract that by its terms should be subject to the laws of New York,

notwithstanding a statute to the contrary of the state of Missouri. The court rendered this decision in the following memorable language:

"The business of life insurance is not commerce; accordingly state statutes regulating contracts between the citizens and foreign corporations is not regulation of interstate commerce."

These three decisions seem to set at rest forever the question that neither fire insurance, marine insurance, nor life insurance, could be construed as interstate commerce. In two other cases, *Liverpool Insurance Company vs. Massachusetts* and *Philadelphia, etc. Association vs. New York*, the supreme court has arrived at the same conclusion. In the now famous case in which the state of Kansas was a party, the supreme court has lately followed similar lines of reasoning. There seems to be no doubt but what the supreme court will never declare that insurance is interstate commerce or that it can be controlled and regulated under the clause of the federal constitution which gives congress the right to regulate commerce.

It has been argued by high legal authority that a broad interpretation of this question would be dangerous and there would be no limit to its effect upon the affairs of men. If the supreme court would hold that insurance was commerce, any interchange of pecuniary benefits between the states would then be interstate commerce. Mr. Nash has given the following illustration:

"A New York resident buys a farm in Connecticut. If the owner lives in Connecticut, the purchase would be a matter of interstate commerce, while if he lives in New York it would be a matter of domestic concern. In the former case, a law of congress requiring a particular form of conveyance and registry at Washington would be constitutional; in the latter case the Connecticut law alone would govern."

The effect upon the legatees living in the various states and

even the marriage relations would be very seriously affected if the supreme court decided that contracts of insurance, as in the *New York Life Insurance Company vs. Cravens*, were given a broad interpretation.

There is no doubt but what the friends of federal supervision have a great many arguments in their favor. The conflicting laws of the different states under which insurance companies must operate; the arbitrary character of executives of insurance departments; the enormous and unjust burdens laid upon the companies by various systems of taxation; the conflicting requirements made by the different states in their annual statements; and the exacting laws, compelling companies to deposit part of their assets in different states, has brought about a situation in which the companies are rightfully looking to other authorities for succor and relief. Many believe that the remedy for existing evils may be found in uniformity of state laws and state requirements, and much has been done along this line, especially in the annual statement work. The question of taxation, however, has become such an evil among the different states that the companies will never cease their efforts for relief until it has been granted either by the states themselves or through the interference of the federal government. The cost of running the insurance department of the state of Wisconsin does not exceed \$75,000.00, but the insurance companies are required to pay over \$1,000,000.00 towards the support of the state. These exactions are on the increase instead of decrease, and other states are following the example set by Wisconsin. New York, Ohio, Michigan, North Carolina, Pennsylvania, Massachusetts, Missouri and Minnesota are collecting enormous sums from insurance companies. It has been estimated that in the aggregate insurance companies contribute over twelve million dollars a year towards the support of local governments. The most notable example of taxation which history records is



the case of the Northwestern Mutual Life, located at Milwaukee, Wisconsin. This company has paid over half a million dollars a year in taxes to the state of Wisconsin alone, and although the company has appeared before the legislature for several years showing the injustice of this enormous burden, still the legislature has failed to give any perceptible amount of relief.

Insurance companies, being local institutions, should pay a reasonable tax toward the support of the government which gives them protection, but any system of taxation that is levied on the premium income or reserve of people in other states is certainly wrong. Retaliatory taxation is only an argument for federal supervision.

Federal supervision does not necessarily imply the abolishment of the insurance departments, created in the several states by local authorities. It means the relief from over-supervision and over-taxation in all the states except the one in which the company is incorporated. If federal supervision prevails, then the different states, outside of the one in which the company has received its charter, will not be able to collect any taxes nor have any supervision over its affairs. But, on the other hand, federal supervision implies control and possibly fixing the rates which insurance companies can charge. For this reason, some insurance men do not favor federal supervision.

There can be no doubt but what if the evils of state supervision continue the federal government will find some way in which to assume control over the business. The states, in their exactions, will "kill the goose that laid the golden egg," and they will lose all which they might have had if they had only been reasonable in their demands. The evils in state supervision cannot continue. Like any other evil, or series of evils, its life is transitory and its end is near.

The state insurance departments have done much for insur-

ance companies. Through their examinations, although they have been costly, they have kept the assets of the companies clean and free from speculative securities; they have guarded carefully the interests of the policyholders; they have curtailed in a marked degree the powerful influence that comes from unlimited wealth; and through publicity they have made the name "Insurance" stand for everything that is best in the business world. For all this, the insurance companies should be grateful and many believe it is well worth all that it has cost. If the evils in state supervision could be overcome, it is unlikely that the companies would try to escape from state supervision.

The usual arguments for and against national supervision of insurance have been summed up by Dr. S. Huebner, Ph. D., instructor of insurance and commerce in the University of Pennsylvania. The arguments which he advanced in favor of national supervision are as follows:

"1. That national supervision will greatly lessen the unnecessarily large cost of supervising insurance companies by fifty-two separate state and territorial departments, and that by thus lessening the expense it will decrease the cost of insurance.

"2. That it will obviate much of the burdensome and discriminatory taxation now imposed by the several states upon insurance companies of other states.

"3. That it is the only means of remedying the present lack of uniformity in our state insurance laws; that it will be a step toward uniform regulation and supervision of insurance companies; and that it will afford relief from the many petty exactions imposed by the different state departments, as well as from the evils resulting from variations in the rulings of the several insurance commissioners.

"4. That it will afford better protection to policyholders,

and will result in the elimination of fraudulent insurance enterprises.

"5. That it will entitle any insurance company reporting to the national government to transact business in all parts of the Union, at the same time protecting that company against the retaliatory legislation of other states.

"6. That foreign countries would regard with much more weight the certificates issued by a national department, and that the federal authorities would be in a much better position both to protect American companies transacting business abroad and to supervise the large number of foreign companies transacting business in the United States.

"7. That centralized supervision by trained experts would enable the national government at small expense to provide for a much greater degree of publicity as regards this most important business than is possible at the present time. Information regarding the principles, operation and condition of the business could be disseminated throughout the country in clear and concise form as contrasted with the confusing, voluminous and often meaningless mass of statistics issued from time to time by many of the state insurance departments.

"8. That insurance is both in theory and in practice a national and international business, and not a fit subject for state or local control."

The arguments against national supervision are as follows:

"1. That national supervision would be an undue infringement upon state rights.

"2. That the National Convention of Insurance Commissioners is composed of members who are educated to the work, and that it would be better policy to let these commissioners in general assembly continue to provide rules for the regulation and supervision of insurance, as they have been doing for over a half of a century.

"3. That national supervision will increase the chances for fraud by placing too much power in the hands of a few individuals. The constantly changing character of the heads of the many state insurance departments is one of the most desirable features of the present system, since it renders collusion easy of detection.

"4. That the supervision of all insurance companies in the United States, involving such enormous financial interests, and embracing over a dozen kinds of insurance differing radically from one another in many respects, is well-nigh beyond the power of a single department.

"5. That congress is without constitutional power to establish a system of federal control."

To these we would add two more: (6) The many failures of national banks show that federal supervisions will not be as thorough and searching as state supervision. (7) Federal interpretation of the laws would be far more arbitrary than state interpretation, especially in all cases affecting taxation.

## CHAPTER V

## THE INNER OFFICE WORK OF AN INSURANCE COMPANY

The work of an insurance office is divided into two parts—executive and clerical. The executive officers consist of the president, the secretary and the treasurer. In addition to this the board of directors and its various committees, especially the finance committee, are oftentimes a very important adjunct to the executive officers. The board of directors is elected by the stockholders at their annual meeting, and the finance committee is appointed by the board of directors. The directors also elect the president, the secretary, and the treasurer, and if there are any vice presidents they also elect those officials.

The president is considered to be the real official head of the company. He is usually the highest paid employe and ordinarily a man who has had a very large experience in the insurance business. He is familiar with all of the details connected with it, and but little of importance is transacted without his council and guidance. He may delegate some of his powers to other officers, but he is held responsible to the board of directors for the efficient management of the company. He exercises general supervision over the property and concerns of the company, presides at the meetings of the board of directors, convenes special meetings of the board whenever in his opinion the interests of the company require it, signs all policies of insurance, and renewals of the same, conveys all real estate, gives

satisfaction of mortgages at maturity, issues and signs certificates of stock, signs or countersigns checks and drafts on banks, signs on behalf of the company all agreements with agents and all other documents and papers in connection with the business. He makes contracts with reinsurance companies and performs all the functions that are necessary to carry on a successful insurance company. The president may be said to be the real manager of the company, and its success or failure is largely attributed to him.

The office of secretary is a very important one, because through it the company comes in contact with the agency force, and the people. All the correspondence with the company is usually conducted through him, and he is ordinarily a very skillful letter writer and usually possesses the art of being firm and yet courteous in all of his correspondence. Sometimes the offices of secretary and treasurer are combined, as it has been found that there is no need of two separate systems of books for recording the financial transactions of the company. If this is the case, then all moneys paid to the company are received by the secretary, who in turn deposits them in some bank or trust company. He signs all drafts and checks and pays all losses and expenses. The financial statements are drawn from the general books of the company and the secretary and president sign the affidavit declaring that they are correct according to their best information and belief. The secretary keeps all books of account and prepares them for inspection whenever called upon by the different committees of the board of directors. He countersigns all policies of insurance and their renewals, certificates of stock, conveyances of real estate, satisfaction of mortgages paid off, and other agreements and documents as may be required by the business of the company. He takes charge of the common seal of the company and affixes it to deeds, documents and other papers. He keeps the minutes of the board of directors, and when required to do so by

the board of directors or any of its standing committees prepares a balance sheet of the affairs of the company and recites its general condition at the stockholders' annual meeting. The board of directors may at any time appoint one or more assistant secretaries, and in case of the absence or disability of the secretary or of a vacancy in that office the president designates which of the assistants shall act as secretary until the disability is removed or the vacancy is filled by the board of directors.

The treasurer is a fiduciary agent of the company. If the office of the secretary and the treasurer are not combined then he performs many of the duties which we have mentioned as belonging to the secretary. All money received by the secretary is turned over to the treasurer who deposits it in the banks or trust companies designated by the board of directors. He disburses the money of the company through checks and drafts and keeps a separate set of books, showing the cash receipts and disbursements of the company. The secretary indicates the manner in which the money is to be disbursed and the treasurer pays out this sum on the warrant of the secretary.

The finance committee usually consists of three members of the board of directors and the president, or in his absence, the vice president, who acts as an ex officio member. It is the duty of this committee to have general supervision over the financial affairs of the company. It invests the funds of the company and decides the character of the securities to be purchased by the president. They report their proceedings to the board of directors at its regular meetings.

In addition to the finance committee most companies have an executive committee which also consists of from three to five members elected by the board of directors. The president or the vice president is an ex officio member of this committee. It is the duty of the executive committee to exercise supervision and control in all matters affecting the business interests of the company not specifically consigned to other committees or given

to the executive officers. It also examines the books and accounts of the secretary and makes a report to the board of directors from time to time as to the financial condition of the company. A record of their proceedings is kept in a minute book for the inspection of the board of directors. This committee is the advisory committee of the president and with that executive determines the policy of the company.

### *Clerical Force*

The clerical force consists of the home office employes of the company other than the executive officers. They are appointed by the president through the advice of the executive committee. In some companies the function of employing proper employes is left entirely with the president. He also has the right of removal.

The salaries of the employes are frequently very moderate in comparison with the officers, and oftentimes they are very much under-paid. Their responsibility, however, ends with the performance of their duties and they have not the success or failure of the company on their heads. The low wages bring about a very unfortunate condition of affairs and changes in these subordinate positions are very frequent. This is especially true of the smaller companies. As soon as the clerks become proficient in their work, they demand higher pay, and, if they are unable to obtain it, they drift to other companies. This reacts upon the company in inefficient service, poor work and closer supervision. The company is frequently in sore straits until new clerks can be educated to perform the duties of the old ones. A mistaken opinion prevails that much of the work of an insurance office consists in simply recording the transactions and filing important papers. There is no branch of the business which is unimportant or trivial. In order to make the fire insurance business a success the entire clerical force should be men of a high order of intellect. It would be greatly



to the advantage of the company if skilled help would be employed in every department of the work and their employment become permanent.

In order to have a contented clerical force they must be well paid, their hours of labor proportionate to the physical and mental labor involved, and frequent half-holidays and recreations should be given. Good living conditions, fresh air, wash rooms and toweling, and sanitary devices should be provided. In this connection it might be said that an insurance company ought not to be located in a congested center where the rental is high. It should be located in the less densely populated part of a city where there are open spaces and the offices freely accessible to the light and pure air. The question of food, especially in New York City and other large insurance centers, has become a vital one. Nearly all the clerks are obliged to eat improper food, at low-cost eating houses and lunch counters, for their noon meal. Lately there has been a movement on foot to set aside lunch rooms where the clerks could be served with their noon meal. These are usually divided into two parts, one for the clerks bringing their lunches and the other for those who are obliged to buy their noon meal. Hot drinks are provided for all. It is to be hoped that similar provisions may be made by all companies which have their offices located in the downtown sections, far removed from the employees' homes.

### *Departments of an Insurance Office*

Every insurance office is divided into several departments. There is a department which takes care of the losses which is known as the loss department. Another decides upon the risks of the company and is known as the underwriting department. Another department, called the accounting department, makes the records upon the various books of accounts. If the company is large there is a filing department which keeps track of the daily reports and the accounts coming from the agents. In

addition to these there are reinsurance clerks who have charge of reinsuring the various lines of the company. Card cases are kept in nearly all the departments giving in minute detail the work not kept in the general books. There is another branch of the work which has supervision over the agents and is known as the agency department. The statistical department has charge of the accumulation and tabulation of figures pertaining to premiums, losses, reinsurance, agency expenses, and taxes. The whole work of the office would be practically impossible under present-day methods if it were not for the stenographic force, which aids in the correspondence and other detailed work naturally belonging to their province.

### *Daily Reports*

A large part of the work of an insurance office consists in looking up and taking care of the information found on the daily reports. The policies are written by agents who are scattered throughout the territory in which the company operates. The number of these is frequently very great, amounting to the thousands. When an agent writes a policy he sends to the company a daily report which is a transcript of the written portion of the policy. This passes from one department to another and is scrutinized very carefully for various forms of information. They are sorted and culled in their journey through the departments until only the doubtful ones remain.

All the agents are supplied with the stationery from the office of the company. These include large and small envelopes addressed to the secretary or the general agent of the company, if it has a general agency system. These envelopes have a notation on them calling attention to the fact that their contents consist of a daily report. When a daily report or a cancelled policy is enclosed in one of these envelopes, it is promptly delivered to the proper department. The person opening the mail at the company's office stamps the time of receipt of the

daily report upon it. Endorsements and cancelled policies are treated in a similar manner. The daily reports are then turned over to the employees having charge of the abstract books. If the company does not have any abstract books they are entered at once upon the policy register. The daily report then passes to the map clerk who counts up the number with the amount and premiums written, enters the aggregate in a memorandum book kept for that purpose, and reserves those which are to be recorded upon the maps and turns the balance over to the recorders.

The maps of a fire insurance company are very numerous and oftentimes very expensive. "The price of a map ranges from \$5.00 for a pamphleted map to \$50.00 for a one hundred page bound volume." There are three leading fire insurance map publishing companies in the United States and Canada which control such publications. As a rule the surveys are confined to the most important areas of the cities and large villages. Formerly places having a population of less than 500 were not surveyed, but gradually these have been mapped and the danger points noted.

The map clerk records on the map the policy number, the amount of the risk, the date of expiration and the object insured; that is, whether it is a building, stock, machinery, or furniture and fixtures. If it is found that there are other agents who have written lines on the same building or stock, the policy is usually cancelled unless it is found that the two combined amounts are small. If the amount of insurance is becoming quite large, it becomes the duty of the map clerk to indicate that the company should reinsure a fractional part of the risk. In that case the daily report is passed along to the reinsurance clerk who makes the proper entries.

In nearly all modern fire insurance offices to-day the reinsurance of risks is not left entirely with the reinsurance clerks. Formerly this was the case and the reinsurance clerk was

obliged to find a reinsurance company, or others, that would take part of the risk. This was oftentimes a very difficult thing to do and sometimes the risks were not placed in the very best of companies. To-day each company through its president makes arrangements with other companies or through a regular reinsurance company for the acceptance of fractional parts of their risks. If the contract is made with a reinsurance company in which it becomes responsible for the loss as soon as the cession is completed, such contracts are called treaties. Treaty contracts are very important and it would be practically impossible for a large company to transact business without one or more of them. They usually specify in the contract that the reinsurance company will accept one-half of any risk that the insurer will take except in some restricted districts. In some instances the reinsurance company is required to keep a deposit with the original company guaranteeing the payment of any loss or series of losses that might occur. If this be done, then the original company taking the risk pays the reinsurance company interest on its deposit. In most cases it will be found that the premiums received less the reinsurance commission allowed the company leaves a balance in favor of the reinsurance company. Normal losses will hardly be sufficient, unless the reinsurance company is very unfortunate, to throw the balance in favor of the original company. Small losses, therefore, are paid by the reinsurance company by simply charging against the original company the loss. It is merely a bookkeeping entry, and it is rarely that a remittance is made to the original company. Reinsurance is effected for the purpose of avoiding large losses arising from conflagrations. In that event the reinsurance company frequently makes large remittances to the original company.

The map clerk always keeps an index upon the bunching of too much liability in one block or a series of blocks of buildings. If it were not for the fire maps in determining these

facts, it would be impossible to keep track of the manner in which this liability is distributed.

Ordinarily the hazards in manufacturing plants are not given with any great degree of minuteness on the maps. They usually show the general plan of the buildings. They also note the fire doors or their absence, the location of the buildings and various other features. These, however, are not enough to give the underwriter a clear idea of the risk. In that event he turns to the special agent or the company's inspector for more detailed information. The inspectors are sent to the risk. They survey it and draw special fire maps showing the principal hazards. He also writes a report covering the danger points. This report and the survey are usually kept in files for future reference.

There are surveying bureaus which do this work very much better than the average inspectors of fire insurance companies. They employ competent surveyors who are graduates of technical schools and are well versed in electrical and mechanical engineering as well as hydraulics. They are also skilled in every mechanical feature connected with the modern factory, and they are usually experts in the installation and equipment of automatic sprinkler equipments. Their reports to the company are usually accompanied by sketches and drawings showing the elevation and the floor plan of the risk. The company takes considerable care of these surveys and they are enclosed in especially made envelopes each carrying a serial number and they are filed in cases designed for that purpose.

All the various items in connection with a risk are consulted by the map clerks and the reinsurance clerks before they decide if it be necessary to cede a fractional part of the risk. Strange though it may seem the endeavor to place upon the reinsurance companies the most undesirable risks oftentimes results in a saving to the reinsurance company. Some of our very best buildings have not as good a moral hazard as that of the poorer

kind, and consequently we find them burning more frequently than they should.

After the daily report goes to the reinsurance clerk it then goes to another set of clerks who sort them into new risks and renewals. These clerks keep track of the amount of insurance and premiums of both the new and the renewal business. If the business is a renewal, detailed information of the risk has been previously furnished the company. The new business requires special attention and it is passed to clerks who consult all the information which they have at hand in regard to the risk. If this is not sufficient then commercial reports from either Dun or Bradstreet are obtained. Sometimes very good reports are obtained from claim agents, which are frequently made use of by some of the companies. It is important, as we have seen, to obtain the character of the insured and also his financial standing.

The daily report now passes on to the examiners. In this connection it might be well to point out the various changes which take place in the daily report at this stage of the work. If it is found that restrictive measures are needed, different riders are used for that purpose. There are restrictions for the storage or use of volatile oils and explosives, for the storage of automobiles, for vacancy or unoccupancy of the buildings, electric installations, fire works, and co-insurance clauses. By means of these restrictions the original daily report is oftentimes greatly modified. The examiners usually attach these clauses to the daily report after which a letter is sent to the local agent requesting him to affix the same form to the daily report in his office. If it is found that the devices for fire protection have not met with the approval of the underwriters' laboratory, then the examiners notify the agent and request that restrictive riders be placed on the policy form to cover this hazard. In addition to this the examiners audit the rate, compute the premium, and determine if the risk is in a section which has been unfavorably

passed upon by the special agent. He also notices if the property is in the territory of another agent, and if it is he notifies the local agent that overhead writing will not be allowed. In fact all discriminations, errors, omissions, or evasions are discovered before the report is handed to the official having charge of the respective territories from which the agent has sent in the daily report.

The daily report is now scrutinized by the territorial officer, and if it is found in proper order, it is passed on to other clerks called entry clerks. These clerks make the original entries upon the policy register or abstract register showing the beginning of the risk, the date of expiration, the amount insured, the rate, the premium, the class number, and the reinsurance. Cancellations are entered in very much the same way on other records called cancellation registers.

In some insurance offices there are suspense files for those daily reports which do not meet the approval of the examiner. These files are examined very frequently, and if the agent has not answered the questions relative to the risk, further correspondence is had with him. Suspense files are of great importance and they are much to be preferred over the method employed by some companies of having the daily reports floating around the office in various out of the way places where they cannot be located when desired.

There are various methods of filing daily reports. Some companies use what is known as the flat box system, others the loose sheet system, and others have the daily reports bound in books properly labeled as to states, territories and agencies so that they can be found. Other companies prefer the loose sheet upright system. This is the one most in use as it takes up less room and is less expensive. The files are arranged alphabetically by states and agencies and the daily reports can be located very quickly in them. The files are constantly being examined each day to remove the dead dailies and placing re-

newals in their places. The daily reports are the original records of the company in regard to the risks which they are accepting. They are, therefore, of great importance and their care should not be left to immature minds. Men of considerable ability should be employed to take care of this branch of the work.

### *Loss Department*

In tracing the daily report through the office, we have mentioned several departments which go to make up a well organized insurance company. We have still another department which has nothing to do with the daily reports or making original entries in the general books. This is called the loss department.

Nearly all the agents of the company are supplied with what are known as loss blank notices which may or may not be kept in duplicate. After a loss occurs, the agent, who is usually notified of the loss through the insured, makes out one of these loss blank notices and sends it to the company, and, if he has a duplicate, this is kept in his files. The notice varies considerably among the different companies. The name of the agency or agent, the agency number, the policy number, the amount insured, the date and hour of the fire, the name of the insured, the property insured and its location, the estimated amount of entire loss, the estimated amount of loss to the company, the origin of the fire, a list of other insurances, and a space for remarks by the agent for the company's information are the usual contents of the notice.

When the notice of loss reaches the company, it passes to the loss department where it is kept on file. The daily report is taken from the file and this gives the information in regard to whether the risk is reinsured or not. The previous correspondence with the agent and with commercial companies is also abstracted from their files, if not placed with the daily re-



port, and placed with the other papers in connection with the loss. All of the papers relating to the loss are now placed in an envelope which is called a loss file. On the back of this envelope is printed a large amount of data in regard to the risk and the date and origin of the fire. There are notations for loss claim number, name of agency, name of assured, mortgaged property, term, class, date of policy, expiration, date of loss, amount of policy, amount of claim, proof received, amount paid, reinsurance company, cession number, amount collected from reinsurance company, and date when reinsurance was collected. The loss clerk enters this information upon the loss file as it is gathered. The loss files are very important and they are numbered consecutively and usually filed in upright cases. They are kept for several years until the statute of limitations expires and then they are destroyed. In some states this requires six years, and the storage of these reports has become quite a problem with large companies. At any time during this interval a well organized company will be able to locate a loss file and all the papers connected with the claim, if any question should arise in regard to the sufficiency of the payment of the loss.

The care of property partly ruined by fire is one of the first thoughts of a company. Sometimes the salvage from losses amounts to a considerable sum. The company usually acknowledges from the agent the notice of loss and requests him to save and take care of the property which has been partly destroyed by fire, or water from fire engines. If the loss is on perishable property the adjuster is sent to the risk at once. If it is on buildings or other non-perishable property more time is allowed for taking care of the loss.

In the insurance office the loss is now entered by months in the general loss register opposite the claim number which as we have stated runs consecutively. The claim number agrees with the same number found on the loss envelope. The esti-

mated amount of the loss is noted in pencil from the loss notice and the department now forwards the agent a long or short form of loss report. This is called a proof of loss. If the loss is considerable, then the long form is required. If the loss is small and the payment is made through the agent who takes credit for the amount in his account, the short form is usually sent. In either case the proof of loss is returned to the company for their final approval. The adjuster is now notified and he visits the insured and endeavors to make a settlement of the loss.

Considerable difficulty is usually experienced in arriving at the cash value of the property at the time of the fire. The insured is quite apt to over value the amount of his property and the adjuster on the part of the company endeavors to cut the loss to as small amount as possible. This is especially true of stocks in stores and in manufacturing plants. If the stock belongs to a store then the invoices of the company are important data as to arriving at the cash value. The books and records, therefore, are of great importance, and the policy form makes provision that these should be kept in an iron safe. If they are not so kept then the policy becomes void. In some states insurance companies are not allowed to make any deduction for deterioration of buildings. This is known as the valued policy law. Until lately such a law existed in the state of Wisconsin, and it was thought to promote incendiarism, and during the legislative session of 1915 it was repealed. The adjuster of losses oftentimes requires expert help and this can be obtained through adjustment bureaus organized for this purpose. The Western Adjustment Bureau located in Chicago has a very competent corps and there are but few large losses in which they are not represented.

If the insured and the adjusters cannot arrive at a decision, the law makes provision in nearly all the states for a board of

arbitration. This is usually made up by the company appointing one member, the insured another, and these two in turn a third. They take testimony on the amount of the loss and their decision while not final is taken by most companies. If this is not satisfactory to the insured, he then appeals to the courts where a final decision may be reached.

The settlement of claims is one of the very important functions of an insurance company. It is for this purpose that they are organized, and the reputation of the company is usually determined by the manner in which this is done. At the present time the insurance departments of the various states are looking into the claim files of the companies very carefully and if an injustice is found, reparation is required to be made. Fortunately, however, the settlements of the losses by fire insurance companies are made with a considerable degree of honor and there is but little complaint arising from this score.

## CHAPTER VI

## FIRE HAZARDS

In determining the quality of a risk, there are four things which are usually taken into consideration: construction, occupancy, protection, and exposure.

In order to determine the construction of any building it is very necessary that a careful inspection of the entire premises be made. A mere cursory survey of the building is not enough. It should be inspected from cellar to garret. This involves a great amount of labor.

Engineers who are competent to judge carefully of electrical wiring, water pressure and other things connected with the construction of a building are usually employed. In the place where the building is located, we again find hydraulic, electrical and chemical engineers employed in formulating standards for the protection of the city.

*Construction*

Construction has to do with the height and area of the building, its walls, roof, ceiling, sky lights, openings through floors, partition floors, chimneys, exterior attachments and additions. In a very large building one can readily see that there is a great deal of labor involved in determining the proper credits or debits for these various items.

It makes a great deal of difference whether the building is made of wood, brick, stone, cement or steel. When we say

that it is made of these different materials, we do not mean that it is made entirely of any one kind, but rather that the predominating element used in its construction is one of the foregoing. Even in the better class of cement or steel buildings wood enters into their construction. The doors and their frames, window casings, baseboards, ornamental ceilings, are nearly always made of wood. In buildings built of granite or other forms of stone we find that cement may enter into their construction and also certain parts may be made of steel or wood. Each one of these elements of construction has a particular place for which it would be very difficult to find a substitute.

Wood was originally used for nearly all building purposes. It was the natural building material for people to use, and in many respects it is the most healthful even today. When we urge the building of certain classes of risk out of cement, stone or brick, we do not mean to imply that lumber should not enter into its construction. Lumber has and always will find a place in modern buildings. From the standpoint of health wood has many things with which to commend it, but as a material for the prevention of fires it cannot rank with either stone, brick, cement or steel. The people who own large forests are condemning in unmeasured terms the fire insurance companies for recommending other forms of building material. As our forests are gradually disappearing and lumber is becoming higher, other forms of material will naturally enter into the construction of our buildings. If it were not so, our entire forests would be denuded of timber in a very short time. The future of the lumbermen is safe and secure because lumber will always find a place in our modern buildings. To build the outer walls of a building of wood or to make the roof from common shingles is to invite sure disaster. Such buildings are only waiting for the time to testify to their ability to turn themselves into smoke and ashes.

At first thought we might sometimes wonder that the height of a building should affect its hazard. Still this is true. The difficulty of getting adequate water supply to a great height is considerable as it is not possible for ordinary hose of common fire engines to reach the source of a flame on the top of a very tall building, hence height is a problem of construction and modifies the hazard. A building that has a large floor area without intervening fire walls will burn much more quickly and the flames will spread more rapidly than in one of smaller size.

The outer walls of buildings should always be made of a form of material that will prevent the destruction of the building from the outside. If the inner walls are also made of some fire proof material fires may often be confined to a single room and be put out before they reach a dangerous size.

The roofs of buildings should be made of tin, tile or steel. Shingle roofs should no longer be used especially in the residential portions of a city. In isolated country districts shingles will still be used as the main material for roofs.

Skylights have their dangers and it is a problem of construction to see that they are properly made and protected in such a way that they will not form a sort of a chimney which may cause a vacuum through which the flames will be forced with great fierceness.

Openings through floors may serve in much the same way that skylights do in producing a large fire. If such openings are to be made they should be properly protected by steel doors.

Chimneys have and always will be a great source of fires. A few years ago it was not uncommon to have a simple stove-pipe running through a wall and frequently not even protected with a thimble. To-day, happily, most of these have been done away with because the fire insurance companies would not take buildings with such a hazard. Chimneys should be made of brick and extend from the basement floor through the roof to a sufficient height so that a flame from the chimney will not strike

the roof. A great many fires have been caused by chimneys overlapping on the roof and not extending to the basement. The shelf on which the chimney rests sometimes gives way and the upper part of the chimney above the roof is separated from the part below. Sparks from the stove or furnace passing up the chimney enter into the walls of the roof and the building is in great danger of being burned. Another source of fires is found in attachments and additions. Small leans not extending to the height of the main building frequently are the cause of the burning of the entire building. Chimneys running through the lean do not extend far enough above the roof but what they endanger the main part of the building.

We can see that construction is a very important factor of fire hazards and the things which we have mentioned above are simply suggestive of other things which might be said on the subject.

### *Occupancy*

Occupancy has to do with the combustibility of the material which is in the building. A great many things that are in a standard building greatly increase the fire hazard. These vary from ordinary merchandise of low combustibility to merchandise which burns with great intensity. Some forms of goods give off an inflammable or explosive vapor at ordinary weather temperatures, such as matches, celluloid goods and gasoline. The range between these extremes is considerable and the hazard must be determined by the nature of the goods which occupy the building.

In dealing with the subject of occupancy it is necessary to determine the hazard by the cause of fires. Among these are: first, places used for the sale of goods either wholesale or retail; second, places of abode such as apartment houses, boarding houses, hotels, club buildings and lodging houses; third, places where people gather for recreation or education such as clubs,

lodge rooms, churches, schools, public halls, armories, saloons, bowling alleys and billiard halls; and fourth, places where goods are manufactured or assembled. This latter class covers all industrial risk where the hazards are found in the raw material or the finished product. The labor employed for the heat producing apparatus such as furnaces, dry rooms, forges, etc., are important elements that modify the hazard in manufacturing establishments.

The occupancy of a building also takes into consideration the damageability of goods. The means for removing goods with slight damage in case of fire is important. Smoke, water or oil may damage goods greatly, and proper protection against the removal of goods is an important element of occupancy.

### *Fire Protection*

The third important element of hazard is fire protection. Usually this is determined by the water works, fire department and ordinances relating to fire prevention, high pressure mains, private fire protection, and sprinkler equipment. All of the foregoing are very important. Good water works, a well equipped fire department, ordinances in relation to preventing fires, high pressure mains, and tall buildings are among the elements that affect the hazard. A building located where there are no water works nor fire department would not be able to get as low a rate as one in a modern city with these equipments.

In unprotected towns manufacturing plants frequently have their own private protection. These may partake of the nature of the full equipment of a modern city or they may be of a more modest character having standpipes, hose, outside fire escapes, buckets, automatic fire alarm systems, chemical extinguishers, and watchmen with watch clocks.

Among the most important of all the means for preventing fires which are usually placed in the buildings through private



enterprise is the automatic sprinkler equipment. This consists of a large number of pipes running to all parts of the building terminating in a sprinkler so constructed and arranged that fire in any part of the building fuses or melts a soft metal in the sprinkler and the water issues from the head in many fine streams, sprinkling the fire at its very origin. If such a system is properly installed and supervised, it becomes one of the most perfect equipments for the prevention of fire that has been designed up to the present time.

### *Exposure*

The probability of a fire passing beyond the limits of the building in which it originated is called exposure. A very large number of fires, probably about one-third of the total number, are produced from outside sources. All conflagrations are spread in this manner. In studying this subject it is necessary to take into consideration the exposed and the exposing building. A very well constructed building is frequently in great danger because of the poor construction of a building adjacent to it. In determining the hazard of exposed buildings, the construction, occupancy and protection of the exposed building must be taken into consideration. These are modified in a measure by distance. Formerly it was quite common to add to the basis rate a flat amount for exposure, but the more modern methods of rating consider this a hazard in the same way that other hazards are determined, and it bears a proportionate share of debits and credits. The study of exposure in a city is of great importance, but in outlying districts it does not form a very important factor in the determination of the hazard. As exposures are close in congested centers, modern wire glass windows and fire shutters should be used.

*Physical and Moral Hazards*

The foregoing hazards which we have described; namely, construction, occupancy, protection and exposure are sometimes called physical hazards. They are called physical hazards because they are inherent in the risk itself and not its surroundings. There is another form of hazard which we have not as yet discussed, owing to the fact that it cannot be measured. It is called the moral hazard. Moral hazards arise from personal factors. They are hidden—presumed rather than known, and consist largely of a set of circumstances which lead to conclusions in regard to the origin of fires. As a matter of fact they are indefinite—incapable of analysis, separation or estimation, yet they are frequently of the greatest importance in fire insurance. Some people believe that more fires are caused directly or indirectly through moral hazards than any other one cause. However this may be, there can be no doubt but what a very large amount of property is destroyed each year through this will-of-the-wisp called moral hazard.

Moral hazards arise from two sources: First, a desire to destroy; and second, the lack of a strong desire to preserve. There are some people who are really fire maniacs and love to see property burn for the delight it arouses in them of seeing a fire. These people are largely weak minded, and their proper place is in the insane asylum. Fortunately, however, the number of these is very small, and it is questionable if any great number of fires arise purely from this cause.

One of the most powerful moral hazards arises from some pecuniary benefit which may be derived from the fire. A person may have his property over-insured, and circumstances may arise in which he may desire to get the money out of the building. He sets fire to the structure and reaps a benefit from the loss. This is the danger arising from over-insurance which should never be permitted by any insurance company nor should

it be allowed by any conscientious fire insurance agent. More frequently, however, people may be in financial difficulties. They may have their homes mortgaged and be about to lose them through a forced sale. A fire may be the only means of obtaining the vested interest in the property. A new building which has been erected because of some new scheme in manufacture or finance, no matter how good it may be, may prove to be a losing venture, and of course the money in cases of this kind is more valuable than the structure itself, consequently the only way to get the cash is to obtain it through the insurance companies. On the other hand it is possible that a business which was once thriving may be now a losing venture, and that again causes a moral hazard. A merchant may insure his goods and then destroy them when they are found to be deteriorating in value. Not long ago, in one of the small villages in northern Wisconsin, a merchant had three successive fires and he retired from merchandising a wealthy man. It is said that he reaped a large harvest on the salvage which he derived from the sale of the damaged goods. Money has been said to be the root of all evil, and this is no less true in fire insurance than in other forms of business. It is one of the most powerful incentives to wrong doing, and creates a condition where the moral hazard is involved.

We have seen in our study of the history of fire insurance that the early merchants guarded their goods very zealously in order to prevent their being destroyed by fire. The desire not to preserve property nor to conserve it for the interest of society is a very powerful factor in creating a moral hazard. There are some homes which have shingled roofs that are covered with moss and so decayed that they ignite like tinder when the first spark strikes them. Weather boards are not painted and they become decayed to such an extent that an exposure fire easily sets them afire. The whole question of the preservation of property is a very important one and involves the personal ele-

ment to a large degree. Fire insurance companies should be very careful to determine the amount of the mortgage lien on the property, and whether the factory is occupied by a business that is a going concern, and whether the men who are at the head of the concern are of unimpeachable character. Herein lies the value of inspection. Agents, through a desire to get their commissions, may overlook these important factors, but the disinterested inspector will not be swayed from his duty because of financial reasons. It is his duty to determine if the insured is a man that has many enemies in the community. Sometimes large fires have happened because of the desire to avenge some real or fancied wrong. The manufacturing plant may be so odious to a neighborhood that it is in great danger of being burned by the residents of the district. Some profitable institutions which are going concerns are very objectionable to the communities, for instance such as tanneries and packing plants, illuminating oil manufactures, and other plants which are nuisances because of the filth or the stench which comes from them. All such plants should be looked at askance by an insurance company.

You will see from the above that the study of moral hazards is very important in determining the question of whether a risk is a good one or not. It is one, however, which is largely overlooked by the ordinary local agent. Commercial reports should always be at hand and carefully studied before the acceptance of a large risk.

### *Conflagration Hazard*

There is another hazard which might be studied in connection with the subject of the causes of fires. It is the conflagration hazard, which is, properly speaking, a part of the hazard of exposure, and might be studied in that connection. There seems to be, however, in connection with the study of the con-

flagration hazard, two elements which stand out prominently: (1) it seems to be a combination of all hazards, and (2) a more extended time is required to arrive at data and ratios than in other hazards. As white is sometimes said to be the combination of all colors and black the absence of color, so conflagration hazards may be said to be a combination of all causes of fire and the normal hazard the absence of this union. Extending over a series of years, it has been found that the experience of most companies would bear out the fact that from twenty to twenty-five per cent of the losses paid arise from large fires. No rate is adequate that does not make provision for this hazard.

### *General Causes of Fires*

In closing the subject of hazards I am pleased to quote from the state fire marshal's report for the year 1914, of the state of Minnesota. He says: "The fire record of Minnesota for the year 1914, while not being all that could be desired, is fairly satisfactory under present conditions of the statutes, and a somewhat lax public sentiment in the methods of fire prevention and the punishment of incendiaries. The year 1914 shows an increase of 290 in the total number of reported fires, with an increase of \$454,576 in the total damage to buildings and contents. In 1913 there were 2,511 fires with damage of \$3,920,780, while the figures for 1914 are 2,801 fires with a resulting damage of \$4,375,356. The average loss per fire for the two years is almost identical, the 1913 average being \$1,565 per fire, while the 1914 figures are \$1,562 per fire. \* \* \* Even a cursory investigation of the causes of the various fires of the year must impress the most thoughtless with the large proportion of fire damage which comes from preventible sources. The loss for the year from fires caused by defective flues is

\$103,009. To this must also be added a \$45,000 loss occasioned by sparks from chimneys, \$53,000 loss caused by sparks from locomotives, and a loss of \$99,150 caused by sparks from smoke stacks, a total of more than \$300,000 which would seem, practically all of them, to be easily preventable. Fire damage from defective electric wiring caused losses during the year of \$387,378. There can be no question that there is something radically wrong when a loss of more than one-third of a million dollars is traceable to such a source. \* \* \* Fires traceable to lightning caused a loss to the extent of \$210,056. This, it seems to me, makes it advisable to repeat what has been said along this line in previous reports. Lightning rods, if properly installed, afford practically absolute protection from losses from this source \* \* \* : Damage to the amount of \$46,950 resulted during the year from smokers' carelessness. The moral in this case is too large to be enlarged upon \* \* \* . It has been further demonstrated that few people realize the number of fires and the fire damage which result directly from incendiarism. Reports for the year give fire losses through causes unknown amounting to \$1,701,762. I wish to give it as my opinion based on four years' work and investigation that at least half of those fires which are reported are the work of incendiaries."

In the state of Wisconsin for the year 1914 the state fire marshal reported that his office had received notice of 2,906 fires which destroyed \$5,585,146. The value of the buildings was \$26,587,145 and the total insurance thereon was \$11,315,340. Out of this number there were 1,183 dwellings and 80 factories destroyed and the causes which brought about these fires were as follows:

*Dwellings*

Adjoining .....	35
Alcohol lamp explosion .....	1
Ashes against wood .....	10
Blow torch .....	6
Boiler defective .....	1
Candle, carelessness with .....	16
Chimney, burning out .....	20
Chimney, defective .....	210
Chimney, spark from .....	89
Christmas tree .....	11
Clothing too near stove .....	16
Drapery too near open flame .....	6
Electric wiring defective .....	17
Engine, railroad, spark from .....	7
Engine, stationary, spark from .....	3
Fireplace defective .....	9
Fireworks .....	1
Flatiron on wood .....	8
Fumigating .....	1
Furnace defective .....	16
Gas explosion .....	6
Gas jet .....	3
Gas lamp defective .....	1
Gas stove explosion .....	9
Gasoline, cleaning with .....	1
Gasoline explosion .....	5
Gasoline stove explosion .....	15
Heating grease, oil, tar .....	4
Heating pipe too near wood .....	22
Incendiary .....	25
Suspicious .....	14
Incubator .....	4
Kerosene lamp explosion .....	24
Kerosene lantern explosion .....	1
Kerosene stove explosion .....	23
Lightning, not roddeed .....	78
Lightning, roddeed .....	4

Matches, carelessness with .....	78
Matches, children with .....	61
Matches, mice with .....	14
Oil, carelessness with .....	1
Oily rags .....	12
Rubbish burning .....	14
Running fire .....	16
Smokers' carelessness .....	15
Smokehouse .....	1
Smokestack, spark from .....	2
Spontaneous combustion .....	6
Stovepipe too near wood .....	55
Stove too near wood .....	64
Thawing pipes .....	7
Tramps .....	8
Unknown .....	111

### *Factories*

Back fire .....	2
Boiler defective .....	3
Cupola, spark from .....	1
Cotton picker .....	2
Chimney, spark from .....	1
Cupola, spark from .....	1
Dry kiln defective .....	1
Dust explosion .....	1
Electric motor defective .....	2
Electric wiring defective .....	11
Engine, stationary, spark from .....	1
Fireplace defective .....	1
Forge, spark from .....	2
Furnace defective .....	2
Gas explosion .....	3
Gas plate too near wood .....	1
Heating grease, oil, tar .....	1
Heating pipe too near wood .....	1
Hot box .....	1
Hot metal on wood .....	2
Hot sand in bin .....	1
Incendiary .....	2



Suspicious .....	1
Lightning, not rodde	5
Matches, carelessness with .....	2
Matches, children with .....	1
Oily rags .....	3
Rubbish .....	2
Sawdust .....	1
Smokers' carelessness .....	1
Smokestack, spark from .....	1
Spontaneous combustion .....	8
Stovepipe too near wood .....	1
Stove too near wood .....	3
Unknown .....	7

In studying the above reports of the causes of the destruction of dwellings and factories, it will be seen that the hazards which we have described in the preceding pages are all represented.

## CHAPTER VII

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### RATING OF RISKS

One of the most difficult problems in connection with fire insurance is the adjustment of fire losses to the hazards. This is known as rating. If we stop to think for a moment of the great variety of buildings which we will pass on the streets of an average town or city, and then think of placing a rate upon these buildings and their contents in an equitable manner so as to give a fair profit to the company and pay the losses and expenses, we will, no doubt, begin to realize the difficulties of the problem. Up to the present time it has been impossible to fix the rates through the experience of the companies. It would not be a difficult matter to obtain the average rate of fire loss for all risks located in the United States, including Canada. It is even possible to divide risks into classifications and then determine the average rate of fire loss for each classification, but as the individual risks in each classification differ widely one from another, this rate would not be of any use for rating purposes. "Classifications have also their limitations." Fire insurance as we have previously stated is based upon the law of average and it is necessary in order to obtain a reliable ratio that the number of risks in a classification shall be large in number. There is, therefore, a wide gulf between the loss ratio of a classification and the ratio which should be applied to individual risks. Until lately the problem was thought to be unsolvable. Mr. E. G. Richards, United States Manager of

the North British & Mercantile Fire Insurance Company of London, England, in his book entitled, "The Experience Grading and Rating Schedule" has stated the problem very tersely, as follows:

"A solution of the problem of harmonizing classified experience with schedule rating—or, what is equivalent, of proving the correctness of the schedule rate by the combined experience of stock companies—has been sought for as the philosopher's stone of the alchemists; if not as sedulously in the first instance as the latter, it has been from no lack of desire but with less hope of success.

Thus far little light has been thrown upon the subject, nor practical solution found.

The impression still obtains that such an accomplishment is impossible, and I am in full accord with such opinion when viewed from the standpoint of present rate-making hypothesis.

Experience tables yield only a single average fire-loss rate for all risks in a single class, however few or many may be included in that class.

Any knowledge of the separate cost of each of the many hazards, which, combined, make up this single average loss rate, is, we may safely assume, impossible to obtain. Neither would such tables be of value for proving the correctness of the assumed or estimated costs which are used for measuring defects in risks rated upon the present time rating schedules. \* \* \* No rating schedule yet devised is founded upon actual underwriting experience, in the sense that against any of its parts, or its completed rate, can the combined classified experience of the underwriter be placed and show whether or not it is a correct measure of underwriting cost."

Mr. Richards has stated the problem quite clearly, and has explained the main reason for the dissatisfaction that exists to-day among business men and officials of insurance departments. Schedule rating is not based upon experience. In fact, it is

nothing more or less than a guess or estimate of results. This does not seem to satisfy the popular mind that rates based upon such data are either reliable or scientific. There are many, however, who believe that schedule rating which has been evolved at such an enormous amount of labor is the only true system that can ever be applied to individual risks. From this conclusion most people frankly differ. They believe that the time is near at hand when a system of rating risks will be evolved which will be based upon experience. The almost universal dissatisfaction with schedule rating has spurred the officials of the companies to action and the National Board of Underwriters is taking hold of the problem with zest and vigor. In this work it is aided by the officials of the companies and the administrative officers of the different departments of insurance.

Already a beginning has been made. Mr. Richards, from whom we have previously quoted, who is also the Chairman of the Actuarial Committee of the National Board of Fire Underwriters, has formulated such a plan and has made provisions for a uniform system of classification and a uniform method of reporting losses.

### *Difficulties in Classifications*

Probably the problem of rating risks through experience would have been solved before if it had not been for the reason that the companies have had no uniform system of classification; they have not co-operated with each other in making classifications; there has been no attempt at uniformity of classification of exposure risk; and the difficulty of classifying risks where the losses are of unknown origin.

Some companies have made only a few classifications covering their experience, while others have had a great many covering practically the same kind of risks. Consequently, there has been an overlapping in the elements which make up the classifications. One company in an eastern city has three hun-

dred and forty-two classifications, while another company of nearly the same size in the west has only forty-five classifications. Both of these companies transact practically the same kind of business, and while the experience of each is no doubt of value to itself, it is practically worthless as regards the data for making a uniform system of rates.

Another difficulty that has stood in the way of obtaining uniformity in classification has been the inability to properly classify exposure losses, and also losses of unknown origin. Both of these are very difficult to place in the proper classification, as the origin of these fires, in most instances, are either very uncertain or unknown. One of our state fire marshals has suggested that the greater number of these fires result from incendiarism and that they stand in a class by themselves.

Another difficulty in obtaining a uniform system of classification is due to the fact that by the time the classification is completed the introduction of new machinery and new processes of manufacture, new systems of heating and lighting almost make the old classification of no value. One of the most potent factors in the life of the average manufacturer in America is the throwing away of old machinery and the substitution of new which performs the work much more rapidly and with less help and expense in manufacture. Fast moving machinery is substituted for slow. The introduction of machinery to consume or take away the dust which may become explosive, the introduction of chemicals which produce heat, the use of electricity and gasoline as power for driving machinery, the manufacture of waste products by a system of bleaching and cleansing, produce such rapid changes that the data which has been gathered soon becomes worthless. In addition to these difficulties, the people themselves, and the legislators in particular are hostile to any combination of companies for the purpose of making rates. The experience of no one company is sufficiently large to obtain the data which is necessary to make

scientific tables of rates. Combinations for comparisons of experience are essential, and no doubt the hostility that arises comes from a misconception of the problem.

In life insurance, with a given rate of interest and a mortality table the net premium is placed beyond the power of legislative enactment. So too, in fire insurance. Given the buildings and the contents and the factors which go to make up a classification and the loss ratio for that classification is beyond the power of legislation. If legislators desire to solve the problem they should begin with the people who build the risk instead of the underwriters who make the rates after the risks are built. Combinations will give the data which will produce a correct loss ratio for a particular classification and this data cannot be obtained in any other way. Those who would therefore prevent combinations are deferring the time for a correct system of rating based upon experience.

In spite of the fluctuations that will occur within any given classification, we are far from believing that the combined experience of the companies are not of great value. Making an allowance for the fact that we have no constant factors in our classifications, still these elements are not limited to any one period of time but continue from year to year. Consequently the elevations and depressions in the curve have a median line. To approximate as close as possible to this stable factor is the ideal towards which we should work. This can only be accomplished by taking the combined experience of nearly all the companies in the United States, both stock and mutuals. This has been made possible by the National Board allowing any company to become a member who will pay their pro rata share of the expenses of carrying on the work of the Board. It is only through the combined effort of all that a close approximation may be obtained toward constant factors.

*Systems of Rating Risks*

Rates have been in the past applied to individual risks by two methods. First, what is known as the personal inspection or judgment rate system; and second, by carefully prepared scientific schedules. Already there is another system which might properly be called the "experience system" which is now in process of completion.

*The Judgment System of Rating*

The judgment system of making rates is suggested in its descriptive title. The officials of a fire insurance company made a rough computation of the relation between a certain classification and the losses accruing thereon. This rate was then made the basis for an inspector, or general agent, or a committee of general agents for determining the rates on a similar line in a village or city. As a matter of fact it was a mere guess and did not discriminate between the character of the various risks which were rated. Another set of general agents or a committee of general agents might view the same risk and determine another rate. This showed up the faults of the whole system. However, as the companies employed men of considerable ability in making these rates they have not been without value. The improvement in construction, fire protection and improved apparatus for putting out fires, and the changes in business methods were not sufficiently discriminated, and the old system of judgment rating finally gave way to the better method of schedule rating.

*Schedule Rating*

The method employed in obtaining the rates on individual risks by means of schedule rating is as follows:

"Rates are made by applying to classes of risks and to individual risks certain charges and credits based upon the various

factors of hazard, namely construction, occupancy, exposure and protection.”

There are many schedules used in the different states, districts or counties, but they all have the underlying principle enunciated above. It will be impossible to enter into a description of each of these, but we will endeavor to illustrate the method of rating three of our largest classes of risks.

Schools, churches and dwelling houses are of such a simple form of structure that a rate on these classes of risks is obtained at a flat rate. Ordinarily, however, the difference between frame and brick structures, shingle and tile roofs, exposure, and sometimes heating apparatus is noted, and allowance made in the rate. In addition to this, there is sometimes an allowance made for efficient fire departments.

The method of rating special hazards such as mills and factories is much more complex. The first step is to conceive an ideal or standard building. This standard building is complete in regard to arrangement and construction and also in equipment for extinguishing fires. A basis rate is then assumed for this standard building. The basis rate is ordinarily made through the judgment of the rater and it is conceived to contain the unknown elements resulting in fire loss. All of those intangible elements which cannot be accounted for in the schedules are joined together in this basis rate. As we have seen in our study of hazards, there is a large number of fires that occur through incendiarism and other unknown causes which are taken into account in the schedules. There is also the element of moral hazard which cannot be measured nor classified. This again forms a part of the basis rate. In fact, the basis rate is the foundation rate upon which debits and credits are to be added or subtracted.

When we have obtained the basis rate, then additions are made to this rate for deficiencies in construction and those factors which ordinarily increase the liability to fire. On the other



hand, any factors which would tend to save the building from fire, such as special forms of fire protection and special factors in construction, are usually deducted from the basis rate. After we have made our additions and subtractions from the basis rate for certain characteristics of the risk, then deductions are ordinarily made for the application of the co-insurance agreement. Many of these schedules are so very intricate that the ordinary underwriter cannot apply them. Skilled help in the form of insurance engineers and inspectors is used in applying the schedules to special hazards. It is oftentimes thought that the rating of a factory in which there is a great deal of machinery would be a very intricate and difficult undertaking. From the standpoint of the insured the rating of these hazards is much more satisfactory than the mercantile risk owing to the fact that the hazards are so conspicuous that little difficulty is had by the rater in applying the schedules. While mercantile risks are not so complex in regard to internal hazards, still they are much more difficult to rate owing to the fact that the hazards are usually concealed, and the insured does not understand the application of the schedules.

In obtaining the rate for mercantile risks, cities, towns and villages are ordinarily divided into six classes according to the amount of protection afforded by the water works and the fire departments. Two basis rates are formed, one for brick mercantile risks and the other for frame mercantile risks. A basis rate is obtained for the brick mercantile risks by again assuming an ideal standard building which is fully described in the schedules. The basis rate varies for each one of the six different classes of cities or towns. In a class one city, it is very different from that of a class four, and still more different from that of a class six. In order to obtain the rate on any one building or its contents, fixed additional charges are made for defects which are minutely reported in the schedules and corresponding deductions are made for special fire prevention features. To

the rate thus obtained additions are made for exposure hazards from adjacent risks. The rate thus obtained is known as the unoccupied building rate. This rate is again increased for occupancy which becomes the final rate.

The rate on the contents is frequently made by adding to the building rate a charge for the contents. The contents are usually divided into four or five classes and a charge is ordinarily made for each class.

The rating of frame mercantile risks is much more simple than that of brick or stone risks. In the first place, all frame mercantile risks are assumed to be substantially alike for the purposes of insurance. The difference in construction being confined to metal roofs and brick or iron covers for the outside walls. A basis rate is fixed in the various classes of towns and similar charges for defects and credits for special fire prevention features are made in a similar way to brick risks. To this rate is added the occupancy and exposure charges. Usually the exposure charges are very heavy owing to the possibility of a fire passing from one risk to another. In frame mercantile buildings the contents are rarely rated higher than the building owing to the heavy exposure hazard. In most cases this charge is left to the judgment of the rater. Mr. Dean in his schedules has devised a formula for obtaining the amount of the exposure charge which is now used exclusively.

### *Moore's Mercantile Schedules*

As we have stated before, there are two systems of schedules for rating mercantile property. The first of these is known as the Universal Mercantile Schedule which was prepared by a company of eminent underwriters under the chairmanship of Mr. F. C. Moore, who was then the president of one of our large American insurance companies. Even to-day in some of our large cities this schedule is used. Especially is this true in New York and Cleveland, but it is fast being dis-

placed even in those cities by the so-called Dean Schedules. Of all rating schedules the Universal Mercantile Schedules are the ones which have been worked out most elaborately and completely. They were a great advance beyond anything that was ever known in the history of scientific rating at the time they were first published. They are so complicated that it is impossible to describe them within the limits of this article. In order to understand them it is best to obtain a copy and study them carefully. A description, however, is given in Mr. Moore's book known as *Fire Insurance and How to Build*. Mr. Moore, in his book, states that in 1891 a committee of four underwriters was appointed to prepare a standard for rating mercantile risks which should be universal in its application throughout the country. Early in their deliberations they reached the conclusions that such a schedule should be formulated upon the following lines:

1. A key rate as to which villages, cities and towns differ.
2. Charges for variation from standards of construction.
3. Charges for hazards of occupancy.
4. Charges for insuring contents according to their susceptibility to damage.
5. The variation of these charges according to the construction of the building.
6. The treatment of fire extinguishing facilities, proximity to hydrants, etc., for the particular risk rated according to circumstances.

In order to carry out these six recognized elements of rating it was necessary to—

1. Conceive of a standard city which involved level and wide streets, good water works, adequate pipe service and other features set forth in the schedules.
2. A standard building which was to be regarded as a model of ordinary construction and not to be fire proof.
3. Establish a key rate.

The basis rate or starting point for rating the standard building was fixed at 25 cents which was obtained by a careful study of the experience tables of the companies. From the starting point or basis rate of 25 cents, in order to obtain the basis rate of the standard building in the city, additions were made according to the deficiencies of the city as to water works, fire department, building laws, narrow streets, etc. The key rate thus determined was used for rating any building in the city charging it with deficiencies from the specifications of the standard building. In addition to this, allowances were made for the co-insurance clause. The chief objection to this system was the necessity for the constant use of examinations, not only in determining the basis rate, but in making the charges for each defect of the construction or for occupancy which go to make up the final rate. Although a great deal of time and research has been spent upon endeavoring to properly appraise the dangers incident to the hazards of construction, protection, occupancy and exposure, still no set of results has ever been obtained which quite cover all the practical problems involved.

### *The Dean Schedules for Rating Risks*

The second class of schedules which is used very extensively in the United States is embodied in the Analytic System for the Measurement of Relative Fire Hazards devised by Mr. A. F. Dean, of Chicago, Western Manager of the Springfield Fire and Marine Insurance Company. It has fast displaced the mercantile schedules in the west and in the principal cities of the east. Mr. Dean has a very different conception of the problem of rating than that set forth in the mercantile schedules. In his preface to the 1909 edition, which is also used in the 1914 edition, he states as follows:

"In this connection it is proper to suggest the truism that fire insurance underwriting is a business transacted upon averages.

Fire hazard as a whole is a compound not of dissociated but of relative parts, and each part is as amenable to the law of averages as the total composed of all these parts. If, under the law of averages, a building of given construction, occupancy and protection will show a given ratio of loss to value during a given period, under the same law a thousand flues, hatchways, sky lights, well holes, wood ceilings, or other parts of the building of given construction will each contribute its one varying quota of your ratio, hence the several parts stand in a position of changing relativity, not only to the whole but each to the other. Fire hazard is by nature a net work of relativity. In constructing a basis schedule we necessarily select certain features of hazard as acceptable and attach to each of these a charge, while other residue consisting of unanalyzable parts we attach a lump sum charge and call it a basis rate. There is no intrinsic difference between the charge we call a basis rate and the other charges except that it includes all things too obscure, indefinite or unimportant to schedule. If, under the law of averages, the relativity between the whole and its parts does not change, and the relativity among the several parts themselves is constant, it follows that each charge bears an unvarying relation to the basis rate, or, conversely, the basis rate a constant relation to the other charges."

Mr. Dean again states:

"The Dean schedule in rating is not called rating because as a system it does not directly seek to establish the figuring price of the fire indemnity, but through analysis and classification to establish the amount of hazard in each risk as compared with other risks. The analyzed parts of a hazard are the bricks that build up the total hazard of each risk, and as bricks may be used to build any building, so the parts in the schedule may build up the estimate of any risk."

The above quotations from Mr. Dean explain quite clearly the basis upon which his system is founded. He concludes

that the flues in a drug store are just as dangerous and contribute as much toward the loss as the flue in a hardware store. The basic principle, therefore, of his whole system is to analyze the various hazards in risks and to place thereon a percentage value which these elements contribute toward the loss. You will note that Mr. Dean does not depend upon classification but rather upon the hazards in classification.

In his 1914 edition of his Analytical System for the Measurement of Relative Fire Hazards of Mercantile Risks he divides this classification into three divisions, namely (1) Brick Construction, which embraces brick, concrete, stone, hollow concrete block, tile, skeleton steel and metallic lath and plaster buildings and their contents; (2) Fire Proof Construction, embracing fire proof buildings and their contents; and (3) Frame Construction, embracing frame, iron sheathed frame, skeleton iron clad, and brick veneered buildings and their contents. In addition to the foregoing there is a division of the work devoted to standard structural features. This divides buildings into hallway construction and ordinary construction. The former of these includes buildings in which all openings between stories are in separate hallways. The latter includes all buildings in which openings between stories, in whole or in part, are not situated in separate hallways. The standard for structural features is determined by the walls, floorways, area and occupancy. Occupancy is divided into two kinds—light and ordinary. The list of light occupancies consists of twenty classes. These had better be studied in connection with the work. The standard for area is one thousand square feet. As illustrative of the standard structural features we will quote Mr. Dean's standard for sky lights.

"Sky Lights: Frames to be of iron or steel with approved wired glass not less than one-fourth inch thick, or quarter inch glass protected by wire netting number 12 B or S gage, one inch mesh, preferably galvanized, set not less than six inches

above glass on iron supports, approved arrangement. In towns of grades  $4\frac{1}{2}$ , 5 and 6, wire netting may be waived for sky lights less than forty square feet."

His standard for chimneys and flues is as follows:

"Chimneys and flues: To be of brick from ground or ledged in walls of approved construction and otherwise standard."

He also gives standards for walls, for floorways, retinues and various other standards of a first class building.

Instead of endeavoring to establish a basis rate for a standard risk in a standard city, as was done in the mercantile schedules, Mr. Dean divides cities into seven classes beginning with villages and small cities which have no fire protection whatever, and which are listed in the schedules as risks of class six, there being a half division between the fourth and fifth classes known as class four and one-half. This seems to be a very suitable basis for such a classification as it is simple and its existence is real, whereas our ideal city is constantly undergoing change and no two persons can agree upon what constitutes ideal conditions for a standard city. From the starting point of unprotected towns and cities they are graduated up to first class cities which include every protection in the way of waterworks and fire departments with exceptional completeness and efficiency.

In the schedules for the brick mercantile tariff, the standard building conceived by Mr. Dean is a one story brick building of ordinary construction in a sixth class town. Mr. Dean does not attempt to establish a basis rate for such a building, but varies the rate from \$.50 to \$1.10. This is elastic enough to give the rater an opportunity to use his discretion in determining which basis rate shall be used. For instance, if conditions are very favorable and the state is advanced in its fire protection appliances, and if the cities are well built and the councils have adopted stringent codes for erecting buildings, it might be possible to give such a state a basis rate of \$.50. If, however, the

state has had a continually large loss ratio, its cities are poorly constructed and made of material which will easily burn, and if it has no building code, it is possible that such a state would have a basis rate of \$1.10. There are other elements which enter into making the basis rate which we will take up later in this subject.

The basis rate will also vary according to the number of stories in the building. The standard building is a one story building. If the building is of two stories or more, the rate varies correspondingly. For the state of Wisconsin the basis rate has been placed at \$.50 because the state has had a very low loss ratio and it is advanced along the lines of fire protection. The tables having the basis rate of \$.50, omitting first class cities, and \$.60, are as follows:

## 50

Height	Class 2½	Class 3	Class 3½	Class 4	Class 4½	Class 5	Class 6
1 story .....	\$.33	\$.35	\$.37	\$.39	\$.44	\$.47	\$.50
2 stories .....	.34	.36	.39	.41	.46	.49	.52
3 stories .....	.36	.38	.41	.43	.48	.52	.55
4 stories .....	.38	.41	.44	.46	.51	.55	.59
5 stories .....	.42	.44	.49	...	...	...	...
6 stories .....	.48	...	...	...	...	...	...
Increase for each additional story .....	.06	.06	.06	.06	.06	.06	.06
Decrease if no basement	.02	.02	.02	.02	.02	.03	.03

## 60

Height	Class 1	Class 2	Class 3	Class 4	Class 4½	Class 5	Class 6
1 story .....	\$.33	\$.37	\$.42	\$.47	\$.52	\$.57	\$.60
2 stories .....	.34	.39	.44	.49	.54	.59	.63
3 stories .....	.36	.40	.46	.52	.57	.62	.66
4 stories .....	.38	.43	.49	.55	.61	.66	.70
5 stories .....	.41	.47	.53	...	...	...	...
6 stories .....	.46	...	...	...	...	...	...
Increase for each additional story .....	.07	.07	.07	.07	.07	.07	.07
Decrease if no basement	.02	.02	.02	.02	.03	.03	.03



In a city or town having a basis rate of \$.50, a first class city would have a basis rate of \$.27, second class \$.31, third class \$.35, fourth class \$.39, class 4½ \$.44, fifth class \$.47 and sixth class \$.50. All buildings four stories high located in cities of the first class would have basis rates of \$.32, in second class \$.36, in third class \$.41 and in sixth class \$.59.

In addition to the basis rate charges are made for areas greater than one thousand square feet. For instance, if the building had 10,000 square feet in one floor the addition to the basis rate would be 10 per cent, for two floors 19 per cent, for three floors 27 per cent, and for nine floors 49 per cent. The schedules give corresponding percentages of additions to the basis rate up to 20,000 square feet. If the walls of a building are frame iron sheathed, skeleton clad, or brick veneered, the basis rate is increased 15 per cent for each wall. If the roof is shingle or composition not approved by the underwriters' laboratory, the basis rate is increased 20 per cent. If the foundations of the building are wood posts or pillars, the rate of increase would be 30 per cent. If metal stacks or stove pipes pass through floors, ceilings or top story, wood lath and plaster or wooden partitions which are safely arranged, the basis rate is increased 5 per cent; if through a roof or window 15 per cent. If the chimneys rest on floors, beams, bracket or joists and below standard, the basis rate is likewise increased 5 per cent.

If the structural and protective features of a building are such as to warrant it, deductions are made from the basis rate in very much the same way in which the additions are made. For instance, for each floor of fire proof construction not including basement, 5 per cent is deducted from the basis rate. If there are outside fire escapes with landings on each floor on buildings three stories and over, 2 per cent is allowed as a deduction. For a watchman 10 per cent is deducted and a similar amount for an automatic fire alarm system. These addi-

tions and deductions are made for the hazard of construction. In a similar way additions and deductions are made for the contents of buildings or for their occupancy. These tables have a basis rate ranging from \$.60 to \$1.00. These are divided into first, second, third, fourth, four and one-half, fifth and sixth class protections. In a sixth class protection, if the contents are located in the basements and the basis rate is \$.70, the damageability being one, the basis rate is \$.15. If the damageability is four, the rate is \$.54. If the contents are on the ground floor and they belong to the class whose damageability was one, the basis rate would be \$.07. If the damageability was four, the rate would be \$.42. The rate would vary also for the second and third floors and for each floor over the third.

There is also a set of charges to the basis rate which are known as after-charges. These are made for heating devises, lighting arrangements, motive power arrangements and general untidiness and carelessness. In fire proof construction, the basis rates vary from \$.45 in class six towns to \$.244 in a first class town. These are again made elastic by having basis rates of \$.45, \$.475, \$.50, \$.55, and \$.60. Charges and credits are also made for areas and other features of construction in a very similar way to the brick schedules. The contents tables vary from \$.45 to \$.60 having also a set of after-charges.

Mr. Dean has divided the factors found in the hazard of occupancy into three parts, namely, causes, media and effects. The causes are the things which originate combustion. The media are the substances on which the causes act with reference to the latent energy or combustibility. The effects are the relative susceptibility of media to damage as the direct or indirect result of fire commonly known as damageability. The schedules arrange the occupancy into three columns which might be designated as cause, combustibility and damageability. Combustibility is divided into five classes:

- C1—Slow burning or incombustibility
- C2—Moderate burning
- C3—Free burning
- C4—Intense burning
- C5—Flash burning (ranging from semi to full explosiveness)

Articles which are classified as slow burning would be heavy hardware, leather, hides, rubber goods, woolen goods, etc. Moderate burning articles would be retail groceries, dry goods, clothing and general merchandise. Free burning articles would be straw goods, millinery, willow ware, furniture, etc. Intense burning articles would be matches, celluloid goods, salt peter, paints and oils, excelsior, cotton, etc. Flash burning articles would be crude petroleum and its lighter products except kerosene and fuel oil, ethers, calcium, carbide not packed, and debris of cotton gins, flour mills, etc. There are several intermediate classes which may be obtained from a study of Mr. Dean's works.

There is a scale of charge for combustibility which ranges from 5 per cent to 320 per cent. The list is as follows:

C1 .....	5%
C2 .....	10%
C3 .....	20%
C3½ .....	40%
C4 .....	80%
C4½ .....	160%
C5 .....	320%

Causes are reported as inert and active. Inert occupancy does not increase the hazard, such as banks, barber shops, dwellings, flats and apartments, offices of professional men, and sample rooms. Active occupancy increases the hazard. This is divided into five classes, namely, traffic hazards, caused by employes and customers in the regular transaction of business; habitations, consisting of boarding houses, hotels, etc.; rooms or halls used for assemblies or resorts where people gath-

er together for some common purpose; industrial or manufacturing occupancy consisting of industrial activities; connected with stocks of merchandise or independent and unclassified, embracing all miscellaneous occupancy. There is a scale of charges for causes as follows:

C1 .....	3%
C2 .....	5%
C3 .....	10%
C3½ .....	20%
C4 .....	40%
C4½ .....	60%
C5 .....	80%

An extensive classification and charges are made for furnaces, kettles and ovens, forging, etc. Damageability is divided into low (D1), intermediate A (D1 ½), middling (D2), intermediate B (D2 ½), high (D3), intermediate C (D3 ½), extra (D4), indefinite (D5). As an illustration of the charges and credits for occupancy, we give the following which we quote from Mr. Dean's book:

	1	2	3
Bakeries (wholesale or retail), bread only.....	10%	10%	D3
1. Additional labor, power, heat, etc. (C2)			
Blacksmith Shops (no wood working).....	10%	5%	D1
Butter, Cheese and Egg Stocks.....	5%	10%	D3

The basis estimates for the frame tariff are made in a similar way to those of the brick and the fire proof except that the basis rates are very much higher. As we have stated the frame tariff includes buildings which are wooden, iron sheathed frames, skeleton iron clad or brick veneered. The basis rates range from \$.90 to \$2.00, varying according to the number of stories and the class of town or city. There is likewise a charge for areas, and tables of credits for structural and protective features the same as in the brick tariff except that they are larger in amounts. Occupancy charges are also greater. Bakeries (wholesale, no crackers or cookies) have charges of

60 per cent; 20 per cent and D3. You will notice that this is very much higher than similar charges under the brick tariff. This is likewise true for the entire list of occupancy.

External exposures are classified under three heads, radiated exposure, absorbed exposure and transmitted exposure. Their names indicate the uses of the classifications. There is a set of charges for exposure in the various towns as follows:

Class 5 and 6 towns .....	40%
Class 4 and 4½ towns .....	33⅓%
Class 1, 2 and 3 towns .....	30%

Mr. Dean has devised a very important set of tables, known as general exposure tables. In order to obtain a working knowledge of these tables it is necessary to consult his book. The subject of exposures has been very thoroughly worked out by Mr. Dean, and his methods are a distinct contribution to the subject of fire rating. It is possible by means of his work and the various diagrams used to compute the exposures on a solid row of frame mercantile buildings. Until the work of Mr. Dean came out this was never possible.

Suppose that we desired to obtain the rate on a one story frame iron clad building with metal roof and without basement, 20' x 50' occupied as a second-hand clothing store. If this building were located in the state of Wisconsin in an unprotected town, the basis rate would be \$.50. As the building is 20' x 50' it contains 1,000 square feet and there would be no charge to the basis rate for area. If there was a brick flue not built from the ground there would be a charge of 8 per cent to the basis rate. Since the building has a metal roof it will have a credit of 10 per cent. Since the occupancy consists of second-hand clothing the basis rate will be increased by 60 per cent plus 20 per cent making 80 per cent. Therefore, the charges would be 88 per cent and the credits 10 per cent, making a net increase to the basis rate of 78 per cent. 78 per cent of \$.50 is \$.39. Therefore, the buildings would

rate, without exposure charges, at \$.50 plus \$.39 which would be \$.89. To this sum should be added a flat rate charge of \$.10 for contents making the total rate \$.99, or practically \$1.00. This is a very simple illustration of the method in which a mercantile building may be rated by means of Mr. Dean's Analytic System for the Measurement of Relative Fire Hazards.

As we have seen, Mr. Dean has attempted to analyze the fire hazards and to fix their proper ratios. That this can be done is beyond the credulity of the average fire actuary. It might be possible to subdivide risks into their component parts but to fix a proper ratio of these parts to losses can never be done owing to the fact that the underwriter cannot subdivide his losses into the same component parts. A fire consumes the entire building and there is no way of segregating the specific parts which have contributed to the loss in the same manner in which we have divided the risk. Therefore the whole system of schedule rating has not a basis that is susceptible of proof but is nothing more or less than a body of estimates "unsubstantiated by actual experience."

The advocates of schedule rating have strenuously argued that the results represented a fairly approximate rate which were frequently tested by the companies, and, if they were found to be too high, the companies have not failed to criticize the ratios which have produced these results. As a matter of fact this may have been done in a few isolated cases but as a general proposition it is entirely untrue. The rates obtained by the use of the schedules have invariably stood as the raters have made them. It is well known that the most potent factor in schedule rating is the judgment of the rater. As his judgment is not infallible and he is not guided by the experience of the companies, grave injustice is bound to occur between insureds having similar risks as well as between states and cities.

The work of the authors of the mercantile schedules and the

Dean schedules must not be underestimated. They have conferred a great benefit upon the people as well as the companies. By attempting to fix a ratio for various hazards and charging each risk with its deficiencies and crediting it with its fire prevention features, they have focused the attention of the people upon the dangers that arise from faulty construction. As a consequence, in the last few years there has been a great improvement along all lines of structural building work. Fire-proof buildings are now found in every congested center of a city and they are also being erected in the outlying districts. It is doubtful if any system of rating could be devised that would have accomplished this purpose so well. It is possible that these schedules are worth all the effort that have been expended in devising them as a means of educating the people up to better building conditions. However, this must not be confused with a correct scheme for devising a plan which will place beyond question the basis upon which a system of rating should be founded.

#### *Experience Grading and Rating Schedule*

A plan for rating risks based upon the experience of the companies has been devised by Mr. E. G. Richards, Chairman of the Actuarial Committee of the National Board of Underwriters. The basis upon which Mr. Richards has founded his system is an analysis of the component parts of a risk by its "comparative qualities of hazards." Other rating schedules have been based upon an analysis of the component parts of a risk through its "specific parts and uses." The first system contemplates the division of each "occupancy class into classes, representing the various degrees of grades of quality, following which combined underwriting experience upon every grade may be readily obtained."

Mr. Richards in his book entitled, "The Experience Grad-

ing and Rating Schedule" outlines the first step to be taken in order to work out his plan. He says:

"This grading and rating system commences with, and finds its origin in, the average rate which stock fire insurance companies should have fairly received throughout the United States upon all risks of every class over a period sufficient for an average, say ten years."

To obtain such rate is a simple proposition, being ascertained by compiling the losses and expenses of all stock companies for the time and territory mentioned, and adding to the sum of these a fair profit for the transaction of the business and for the risk to capital invested; such fair profit being fixed experimentally at five per cent.

The result, divided by the total amount insured, furnishes the average rate which the insurance company should have received upon its United States business during that ten-year period."

As an illustration, suppose that the ten-year experience of all the stock fire companies transacting business in the United States and Canada should show the following results:

1. Amount of insurance at risk	\$250,000,000,000	
2. Losses during same period		\$1,610,414,659
3. Percentage expenses incurred within the different states such as taxes, commissions, agency salaries, expenses, etc.		682,736,408
4. Administration expenses, such as head office and departmental expenses, supplies, postage, etc.		348,136,957
Total losses and expenses		\$2,641,288,024
Add 5% for Profit		132,064,401
Total Cost and Profit		\$2,773,052,425

The average rate per hundred dollars of insurance written would, on the above basis, be approximately 1.109. Mr. Richards in his work covering the ten-year period from 1903-12 inclusive, arrives at a rate of 1.12½, which is undoubtedly correct.



This result is the rate which the companies should have received in order to have realized a profit of five per cent on the insurance cost. It should be noted that this is not five per cent on the capital stock of the companies on which profits are ordinarily computed.

The basis rate determines the correct experience of every class of business, and includes dwellings, stores, factories, machine shops, foundries, paper mills, etc., without any subdivision into classes. Then, again, this experience gives results on every degree of property between the palace and the shack,—the good and the poor. Such a rate is in itself of no benefit for rating individual risks unless it can be subdivided into “rudimentary classes.”

Mr. Richards outlines the plan in which this may be done in the following language:

“From the Nation to the State is the second step towards a solution of the problem, and the average rate that the companies should have obtained during said ten-year period in each State is the next proposition. Every State is a complete unit in itself, territorially, governmentally and politically.

The records from which the average State rate may be ascertained are readily obtainable except as to expenses. To each State the companies doing business therein report annually their losses and writings, but the expenses incurred in transacting the business in that State are not so reported.

As previously stated, there is a wide variation in the ratios of expense of transacting the fire insurance business in the several States. No published reports are available from which can be obtained the actual expense outgo in each State of all companies, therefore resort is made for our present purpose to the records of a few companies whose practice for many years has been to segregate their United States expenses State by State, such expenses as are directly incurred in, and traceable to, an individual State being charged specifically thereto, and all

overhead expense not so traceable being divided pro rata between the several States according to premium receipts."

There is a great difference among the different states in the cost of transacting business. For instance, Mr. Richards shows that the average loss cost for the ten-year period in New York state was 38.9%, percentage expense, namely, commissions, taxes, etc., 22.7%, administration expenses, 5.4%, making the cost of these three elements 67%; to which should be added 5% of 67% for profit, or 3.3%, making the total cost, 70.3%. In Wisconsin the average loss cost was, for this same period, 57.8%, percentage expense, 34.2% administration expense, 21.1% or 113.1%; to which if we add 5% for profit or 5.6%, makes the total sum 118.7%. This is over one and one-half times what an average risk would be in New York state. In California a risk should pay, 312.9%; Texas, 160.5%; Massachusetts, 97.1%; Rhode Island 78.3%; Illinois, 115.1%; Florida, 205.6%; Virginia, 137.5%; Tennessee, 153%; Minnesota, 133.8%; Maryland, 186.4%; Pennsylvania, 98%. The average loss cost for all the states for each one hundred dollars of writings was 63%, percentage expense, 29.1% administration expense, 15%, making a total cost of 107.1%; to which if we add 5% of this sum for profit, or 5.4%, makes the entire insurance cost 112.5%.

These figures are very instructive for they show that some of the states that have been crying loudest for lower rates are least entitled to a reduction. They are, in fact, making other states pay part of their excessive cost of transacting business.

In obtaining the data for the expense element, Mr. Richards suggests the following plan:

"While our loss costs should be obtained from an average experience of at least ten years, because of large fluctuations which conflagrations inevitably cause, it is neither necessary nor advisable to seek for an average expense ratio in the use of the

Rating Schedule beyond the last completed year. For our present purpose the year 1912 has been selected."

The effect of levying excessive burdens upon the companies for transacting business therein will fall upon the states themselves. Mr. Richards says:

"By this system all ratings of a State would be controlled by the State key rate. As that rate is high or low, so would every specific rate be proportionately high or low, hence the importance of having the State rate made as low as possible, through such legislation as would favorably affect the loss and expense outgo in the State and reduce correspondingly insurance rates.

With this rate-making system in full effect, what would be the first thought in those States where the State rate ran above the average? To devise ways and means for reducing same?"

In those states where great conflagrations have occurred, the loss cost is so great as to make fire insurance prohibitive. For this reason conflagration losses are distributed over all the states. Every policyholder in the United States should share part of the burden. State limits are too narrow for a reasonable average. How, then, can we tell what losses to distribute? Mr. Richards has defined a conflagration as being "any fire loss in two or more buildings of sufficient magnitude to increase materially the average loss record of a given state for a ten-year period." The objection to this definition lies in the fact that in some of our less densely populated states a small fire might become a conflagration, while a relatively large fire in our more populous states would pass unnoticed. The loss cost for California, during the ten-year period, as shown by Mr. Richards, was 2.327, but after distributing the conflagration cost to the various states, it becomes less than the average loss rate, being only .716 per \$100 of writings. Before distribution, Wisconsin had a loss cost of .578, after distribution it was increased to .666. In a similar way Maryland had a loss cost of 1.258

before distribution, but it decreased to .474 after distribution. Mississippi was not affected much by the distribution, although the fire at Yazoo City might be considered a conflagration. In all the states before distribution the loss cost was 1.191, after distribution 1.265, an increase. Likewise Illinois before distribution had a loss cost of .585, after distribution .666, the same loss cost as Wisconsin.

Owing to the large sums involved during a ten-year period, there are only a very few states that have had their loss ratio increased by large fires. Mr. Richards says:

"The loss cost of four conflagrations—viz.: Bangor, Baltimore, San Francisco and Yazoo City—when spread over the entire premium record of the several states for a ten-year period—1903 to 1912—amounted on the average to about 12c per \$100 of risk. Although not more than seven or eight serious conflagrations occurred in the United States during that period, the conflagration hazard existed and now exists to a greater or less extent in nearly every town and city throughout the country. For this reason it is believed no fixed charge for this hazard can be made beyond an external exposure hazard, whose limits for grading purposes shall, in a general way, be fixed as stated above.

In this system of rating, such conflagration cost will be found in the United States average rate, also in the average rate of each state, and must necessarily be spread over all classes as well, because all classes should share in detail in the cost of such disasters for the same reason that all states are thus required to do as a whole. In this way the town classes, the occupancy rate and eventually all specific rates will bear their due share of conflagration cost."

The third and most difficult step in carrying out the plan of rating through experience consists in applying average rates on occupancy classes to specific risks. Mr. Richards would do this by grading risks according to their comparative qualities of

hazards. The highest type of risk in an occupancy class would be placed by itself, the medium risks by themselves and the poorest segregated by themselves. Loss experience on these subdivisions would be obtained and then each individual risk would be rated on the loss experience of its grade. The allotment of a specific risk to its proper grade would be the work of the rater. In regard to the method which Mr. Richards would employ, I am pleased to quote from his book, as follows:

"As stated in the early part of this work, there is no way of ascertaining the actual cost of insuring a specific risk, and if experience be used to measure insurance costs, it produces nothing more than the loss rate of an average risk in its particular occupation class.

"It is with the occupation class that classified experience by all present systems stops, and for that reason has little practical value for rate-making purposes because, although each class group contains all grades of risks from the best of its kind to the poorest—the unexposed and the exposed, only a single average fire-cost of all is ascertainable.

"Unless, therefore, the statistician may be able to go beyond the mere average rate so indicated and learn the relative cost of each of the various qualities or grades of risks which make up the group, his statistics will fail of their professed and expected purpose.

"Hence it becomes necessary to carry our class subdivisions as far as the fundamental principle of average will permit. Should we pass that point, the variations of experience would become so wide and erratic as to destroy their value.

"When our risks are classified not only as to occupancy but, in each occupancy class, are graded as to their respective qualities in some fixed number of grades from best to poorest, and losses recorded thereon as they may occur, we will have advanced one step farther in the direction of experience-made

rates, the results from which will furnish a practical solution to the problem before us of just discrimination between the good and the poor risk in their particular class."

He also adds:

"It will be plain to one who has followed the matter as presented up to this point, that this plan of rate-making gives no recognition to premiums—in fact, ignores all questions of premium consideration in the classification and analysis of fire hazard. Neither does it deal with the supposed or estimated cost of constructional or other defects in the risk (the actual fire costs of which are impossible to determine), but only with the comparative qualities of fundamental hazard as found in actual experience.

"No two risks, even as no two persons, are exactly alike, and therefore the risks in each class should be graded as to their comparative qualities and for the same reason that the towns and cities of the United States are now to be graded by the National Board according to public protection.

"For this purpose it is believed that ten grades of quality for each occupancy and ten for each of its concomitant hazards, will give adequate recognition to the merits and demerits of every risk. These gradings will constitute the units of the class hazard, the *ultima thule* of subdivision of classified experience under this proposed rate making system.

"When the writings and losses of each class are thus subdivided into grades of quality, our classification so extended will as readily adapt itself to the recording of writings and losses thereunder as before, and we may therefore obtain the actual fire loss per \$100.00 of insurance of the average risk in each group of quality in its respective class.

"A form of survey for scoring or grading each particular risk must necessarily be prepared for occupancy and for each of the other fundamental hazards. Possibly a greater number of grading surveys will, in practice, be found necessary. Sug-

gested forms for grading occupancy, buildings and exposure are in course of preparation but cannot be completed in season for this publication."

As to the practicability of his scheme, Mr. Richards points out that the plan of scoring risks for grading purposes was made a feature of the inspection reports of the Manufacturers Mutual Insurance Company of Boston, Mass., about forty years ago, and soon after that the stock companies commenced to use a similar system for "expressing and summing up of judgments." He points out that the grading methods have, for the past fifteen years, been applied by several companies to certain classes of their business. The Western Factory Insurance Association has similarly graded its risks since 1897. One of our largest underwriting associations is now using a system of scoring and grading fire protection in towns and cities. He further points out that such a system has been applied by the United States government in the Department of Agriculture.

As an illustration he shows the experience on four grades belonging to the classification of unexposed sprinklered printers and lithographers, involving loss cost, expense, and 5% profit. The grade scoring good has an average rate of .16; fair, .296; indifferent, .495; and poor, .892.

Mr. Richards would divide each occupancy class into ten different grades. He states that he has found from experience that this would give fairly accurate results. At the same time he would grade cities and towns into ten different grades according to the plan devised by the National Board of fire underwriters. This plan is so valuable that we give it in full:

*Classification of Cities and Towns Based on the Relative Number of Points of Deficiency in Fire Defenses and Physical Conditions.*

A First Class City or Town	
is one receiving.....	0 to 500 points of deficiency
A Second Class City or Town	
is one receiving.....	501 to 1,000 points of deficiency
A Third Class City or Town	
is one receiving.....	1,001 to 1,500 points of deficiency
A Fourth Class City or Town	
is one receiving.....	1,501 to 2,000 points of deficiency
A Fifth Class City or Town	
is one receiving.....	2,001 to 2,500 points of deficiency
A Sixth Class City or Town	
is one receiving.....	2,501 to 3,000 points of deficiency
A Seventh Class City or Town	
is one receiving.....	3,001 to 3,500 points of deficiency
An Eighth Class City or Town	
is one receiving.....	3,501 to 4,000 points of deficiency
A Ninth Class City or Town	
is one receiving.....	4,001 to 4,500 points of deficiency
A Tenth Class City or Town	
is one receiving more than.....	4,500 points of deficiency
or without any fire protection.	

*Relative Values of the Various Features of Fire Defenses and Physical Conditions.*

	0 Score if perfect	Score for Deficiencies
Water Supply		
0 to 1700 points of deficiency .....		
Fire Department		
0 to 1400 points of deficiency .....		
Fire Alarm System		
0 to 550 points of deficiency .....		
Streets		
0 to 100 points of deficiency .....		
Police		
0 to 50 points of deficiency .....		
Building Laws		
0 to 200 points of deficiency .....		
Explosives and Inflammables		
0 to 200 points of deficiency .....		
Electricity		
0 to 150 points of deficiency .....		
Natural and Structural Conditions		
0 to 650 points of deficiency .....		
Total .....		5000



It is the plan of Mr. Richards to grade external and internal exposures each into ten grades for each class of construction; namely, (X) fire-proof buildings, (B) brick buildings and (F) frame buildings. Mr. Richards states that his plan contemplates the grading on the following schedule:

"The loss cost of each of ten grades of quality

1. Of inherent hazard of Building or Occupancy, or both combined;
2. Of Internal Exposure;
3. Of External Exposure;
4. In every class of risk and according to its respective City or Town Class."

With the information which we now have at hand it is possible for us to give an illustration of the rating of an individual risk by Mr. Richards' plan of scoring and grading. Suppose that we take a brick mercantile building having an occupancy of wholesale groceries. This would have an occupancy number of 137 according to the classification list which has recently been prepared by the National Board of Underwriters and which is explained quite in detail a little farther along in this work. Suppose that our risk was located in the state of New York and in a first-class city. Before we proceed it would be well to remind the reader that the insurance cost for \$100 of writings throughout the United States is 1.125 and that for the state of New York it is .703, a figure that is very much below the basis rate. If the building does not have any defects to be scored or charged against it, it is considered to be a first grade risk. Since the building is a brick building it will grade in the B (brick) building class. Suppose, also, that the occupancy schedules would score the risk fifty points, then the occupancy would be graded as five in the wholesale grocery class. The risk would now be considered as a grade five wholesale grocery in a grade one brick building in a first-class city. Mr. Richards has prepared a table showing the experience of the com-

panies on the classification of wholesale groceries in the ten grades of cities and also in the ten grades of occupancy from the highest to the lowest. Consulting this preliminary table the loss cost for a grade five wholesale grocery in a grade one brick building in a first-class city is .87. Suppose the hazard of external exposure be graded and that scored forty points and the internal exposure scored twenty points, then the external exposure would be graded four and the internal exposure graded two. Mr. Richards in another set of tables has given the experience of the companies in the ten grades of cities of both external and internal exposures, each being graded into ten different grades from highest to lowest. Consulting these tables we find that an A grade four external exposure to an occupancy in a grade one brick building in a first-class city would have a loss cost of .23 and that an A grade two internal exposure to an occupancy in a grade one brick building would have a loss cost of .35. The entire loss cost would therefore be the sum of .87, .23 and .35, or 1.45. It will be noticed that Mr. Richards does not grade the other hazards which we have mentioned in a preceding chapter but leaves these to be scored and graded in connection with the hazards of occupancy and exposures.

Now the average loss cost to each \$100 of writings in the United States during the ten-year period was .585. Since the loss cost of the specific risk under consideration is 1.45, then this sum is equal to .585 of the whole cost. The whole cost therefore would be 2.47. The difference between the loss cost, 1.45, and the whole cost, 2.47, would be the expense charge amounting to 1.02. If we now add to the whole cost 5% for profit, or .12, the final rate for the risk in this class and grade would be 2.59. Now the average rate in the United States is 1.125 per \$100 of writings and the average rate of an average risk in the state of New York, including the conflagration cost, is .751. The ratio of an average rate of an average

risk in the United States to an average rate of an average risk in the state of New York would be to the rate upon an average wholesale grocery risk in the United States to the final rate on an individual risk in the state of New York. The proportion would be as follows:

$$1.125 : .75 :: 2.59 : X$$

$$\text{Therefore } X = 1.73$$

The rate to be placed upon the individual wholesale grocer risk would therefore be 1.73.

It is difficult to pass an estimate upon this method of rating as it is so new and untried. The amount of labor involved in preparing the different schedules is very great but we should remember that any system of rating yet devised has many difficulties. As each individual risk has to be classified and rated, it is doubtful if more labor is involved in Mr. Richards' plan than that prepared by his predecessors. It has, however, a distinct advantage over that of other systems of rating, being based fundamentally upon the actual experience of the companies. Such a system of rating would be very convincing as to the correctness of the rate which insurance companies were charging the people. It would be easy to prove from such a system that the rates of the companies are not excessive as it is now currently believed.

It is doubtful if Mr. Richards' plan would be comprehended by the average insurer any more than the mortality tables of life insurance companies are understood by the men who take insurance. However, the mass of the people are largely guided by the opinions of the few on such subjects. If the few can be made to believe that the rates of fire insurance companies are above question, then the masses will undoubtedly take the same stand. For this reason Mr. Richards' system of grading and rating risks would be of inestimable value in our legislative halls. It would undoubtedly prevent the passage of many unjust laws discriminatory against the companies. If for no

other reason, his plan should receive the careful consideration of the officials of fire insurance companies.

Mr. Richards' plan is not complete and much remains to be done. He has, however, "pointed the way" and for this he must be considered the pioneer and originator of rating risks through experience. In order to prepare such a system, it is necessary that the experience of the companies on different classifications be obtained. In order to do this the National Board of Fire Underwriters has prepared a uniform system of classification and a loss report blank. This has been described quite fully in the literature prepared by the Actuarial Committee of the National Board. In order that this may be understood we will quote quite freely from this work.

#### *Classification of Risks and Loss Report Blank*

At a special meeting of the National Board of Fire Underwriters on October 29, 1914, a standard classification of occupancy hazards and a form for reporting losses were adopted. These had been prepared by the actuarial bureau committee of the National Board consisting of eight members of which Mr. E. G. Richards, Manager of the North British and Mercantile Insurance Company, was chairman, and Mr. W. E. Mallalieu was secretary. The board adopted a set of resolutions calling upon all the members of the board to use the classification and the loss report form in place of all other forms commencing January 1, 1915. The first four sections of these resolutions which explains their use and the establishment of an actuarial bureau are as follows:

*First.* That the classification of occupancy hazards and the form of loss report blank, as prepared by the actuarial committee be adopted and made the standard of the National Board of Fire Underwriters, to take effect January 1, 1915;

*Second.* That each company member of the board begin same form said date, in place of any and all other forms of

classification and loss report blanks that may now be in use in order that uniformity of practice may be secured, thus making possible a combined experience of the National Board companies of real value for statistical purposes;

*Third.* That there be established within the board a new department to be known as the Actuarial Bureau, the work of which shall be to gather from the members of the board, as well as from such non-member companies as may desire to join in the work and support of the bureau, their experience of writings and losses in the United States, which experience shall be classified according to the standards hereby adopted. This experience to be compiled and tabulated for the purpose of obtaining the fire loss costs of each and every class of hazard in the United States;

*Fourth.* That a part of the work of the bureau shall be:

a. To compile a record of all fire losses upon property in the United States as reported by its members to the bureau upon the standard blanks hereby adopted with information regarding location, character of property, values, insurance, origin of fire, etc.

b. To investigate the fire damages to which each class of property is subject and to develop thorough and scientific information concerning the losses by fire and their prevention.

c. To make and maintain an alphabetical index of all loss claimants as reported by the companies with the fire record of each, such information to be for the benefit of the subscribers to the bureau.

d. To furnish annually to each state that shall require reports of losses, a complete record of losses therein for each fiscal year and in addition thereto, immediate advice to the proper authority in such states concerning losses that require the investigation of the Fire Marshal. Such annual reports taking the place of all specific loss reports now or hereafter legally required.

The various classes of risks are divided into six great divisions or groups, with proper classification numbers, as follow:

<i>Group</i>	<i>Classification No.</i>
Non-hazardous .....	1-100
Mercantile .....	101-298
Manufacturing Specials .....	299-600
Non-manufacturing Specials .....	601-700
Miscellaneous .....	700-
Automatic sprinklered risks .....	801-

The classification numbers are divided into even and odd. The buildings are given the odd numbers and their contents the even numbers. All of the numbers are not used in each classification in order that other classes may be added. For instance, in the non-hazardous group the classifications are numbered from one to one hundred, but only classifications one to twenty-seven are used for buildings and two to twenty-eight for contents. As illustrative of the manner in which hazards are classified we give the classification of the buildings and contents for the non-hazardous group which is as follows:

<i>Bldg.</i>	<i>Contents</i>	
1	2	Barns and Stables—private (other than Farms)
3	4	Churches and Chapels
5	6	City and Town Halls—Court Houses, State Capitols, Armories, Fire Department Houses
7	8	Colleges—Universities, Boarding Schools—Convents
9	10	Dwellings—without Barns, or with Barns Attached (excluding Classes 11-16, inclusive), Apartment and Flat Houses (Apartment Houses having one general Dining-Room, classify with Hotels, see 643-644)
11	12	Dwellings—palatial—of \$50,000 value or more
13	14	Dwellings and Barns—Summer or Winter only
15	16	Dwellings—occupied for Farming purposes
17	18	Farm Barns and other Outbuildings occupied for Farming purposes
	20	Live Stock on Farms, in or out of Buildings (all other personal property on farms except contents of dwellings and 703 and 704 to be classified under 18)
21	22	Garages—private
23	24	Hospitals
25	26	Libraries—public—Museums of Art or Natural History
27	28	Schools and Academies without dormitories.

In order to facilitate the classification of risks there is added to the classification an alphabetical index which arranges the different classifications of risks alphabetically. For instance, academies and schools over stores are given the contents number 160. If we turn to number 160 we find that it comes under the classification known as mercantile miscellaneous. If we had acetate lime works we find that the building is numbered 373 and the contents 374. Turning to these numbers we find that 373 is classified as chemical works, heavy chemicals to include plants making only one or two articles of a more or less non-hazardous nature such as sulphate of copper, etc. This distinguishes it from chemical works that manufacture acids and those that manufacture chemicals of a hazardous nature. Then again there are chemical works for reduction of metals, known as electrolytic plants, etc. Turning to a more common group we find baked goods and retail stocks. These are given building numbers 117 and contents 118. Turning to these numbers we find that they are classified as confectionery, ice cream parlor. Therefore, by numbers of the index one can readily determine the classification to which any risk might belong.

Constructions are classified as fire proof, denoted by the letter X, brick, denoted by the letter B, and frame, denoted by the letter F. Number 22X indicates contents of a fire proof private garage. If the letter P follows the classification number, it indicates that the risk is a protected one and is located within five hundred feet of a public hydrant and connected with a town or city system of water works and within one and one-half miles of a legally organized and equipped fire station. All risks that are not protected are called unprotected and are designated by the letter U.

The loss report form which was adopted by the National Board of Fire Underwriters is so arranged as to give the necessary statistics which would be required in order to make up a

standard table of rates. This form is of so much interest that we give it in full. It is as follows:

### LOSS REPORT FORM

as adopted at special meeting of the Board, October 29, 1914

Company reporting.....	Department of Company.....
Claim No. of reporting Company.....	
Name of Assured.....	
Number of Companies interested.....	
Location of Risk .....	Floor.....
City or Town .....	State.....
Date of Fire .....	
Cause of Fire.....	Cause No.....
Property Covered .....	Class No. (Building, .....
	(Contents, .....
Amount insured by this Company (no deduc-	(Building, \$.....
tion for reinsurance) .....	(Contents, \$.....
Loss Paid by this Company (no deduction for	(Building, \$.....
reinsurance) .....	(Contents, \$.....
Total insurance at time of fire on property	(Building, \$.....
covered .....	(Contents, \$.....
Sound value of property as fixed in adjust-	(Building, \$.....
ment .....	(Contents, \$.....
Value of property destroyed or damaged.....	\$.....
(Regardless of insurance)	

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\*Losses sustained as reinsurers of other companies are not to be reported.

In order to facilitate the use of the form a list of twenty-eight common causes of fire is given. The list and its subdivisions gives the information required for getting the necessary experience on each classification.



If this standard classification and loss report form is used by all of the member companies of the National Board, there can be no doubt but that the basis will be laid for a successful table of rates. The more one studies the problems the more fully one becomes convinced that the next table, which will be used for rating purposes, will be based upon the experience of the companies. The standard classification has met with a hearty response from the insurance departments of the various states, the state fire marshal departments, the various companies belonging to the board, and also many who are not members of the board but who desire to aid in the work of compiling a scientific table. With the establishment of the actuarial bureau and the extensive powers, which have been given to it, there can be no doubt that the material required for making a scientific system of rating will be collated. It will take, however, some time before results can be obtained on these classifications in order to make up a scientific set of schedules, but, with more definite information at hand, schedules ought to be prepared which will fix the rates so that they may be susceptible of proof. This does not mean that we are to discard all the work that has previously been done by fire actuaries, but rather to add to the knowledge which we already have on this subject.

### *Unclassified Elements in Rating and General Misconceptions*

Small towns and even cities located in close proximity to forest regions, might be endangered by forest fires and should have a higher rate than one not so exposed. Properly speaking this is a problem of exposure, but it is rarely taken into consideration in this connection. In Michigan, Wisconsin, Minnesota and other states of the northwest there are large forest areas which are being cleared. Frequently a town or city is built up around a saw mill and other lumber industries and the

main occupation of the people is lumbering. Forest fires may break out and sweep the whole town out of existence. Large piles of lumber located near these towns are a constant source of danger. For these reasons such towns should have a higher rate than those located in the open.

At the present time we hear much complaint about some of our western cities not having as low a rate as those located in the east. Undoubtedly there is some justification for this complaint. Especially is this true of the city of Chicago whose rate was raised at the time of the San Francisco conflagration and was not lowered until recently. Still there is a great difference in the construction of the dwelling houses and other risks in Chicago and those in Philadelphia. The long rows of brick dwellings in Philadelphia have prevented fires, while in Chicago the greater proportion of the dwelling houses are of wood which have a greater liability to being burned. In New York City people live in large apartment houses several stories high, which are frequently fire proof. Milwaukee, Wisconsin, is largely built of wood. While the fire loss may be comparatively small for a series of years, the liability to fire loss is much greater in Milwaukee than in New York City. Consequently the rate will be higher in Milwaukee than in either New York or Philadelphia. This is equally true of manufacturing plants.

A misconception in regard to the problems involved in fire insurance rating has been the cause of much discontent with the rates charged by fire insurance companies. It should be understood that a risk is rated according to its probability of destruction by fire and not because of actual real fire loss. The public in general should be impressed with the fact that rates are made on account of liability to fire and not actual fire loss. A city may have a great liability to a large fire loss and pay a higher rate for its insurance and still may not have a fire for a number of years, and it may possibly never occur. Still, owing to its

great hazard, it is penalized for its neglect. This misunderstanding of the essential factors of fire rating has caused the insurance companies a great deal of trouble. State authorities have insisted that the cities in their particular state should have a low rate because they have not suffered fire losses. In the state of Kansas the insurance department was given the authority to pass upon rates and on August 19th, 1909, ordered a reduction of 12% from existing premium rates and the exposure charge on dwellings be eliminated. The companies fought this lowering of the rates and finally the question was carried into the courts, which rendered a decision, ordering the rates restored. It may be quite true that the state of Kansas may not have had a larger loss ratio than some of the states in the east, still no one can visit the cities of Kansas without being impressed with the difference in the construction of the buildings there, than on the Atlantic sea board or in the central states. San Francisco pays a higher rate than Chicago because of the hazard connected with earthquakes and the danger to great conflagration. New Orleans pays a higher rate than Cleveland because a large part of the old French section of New Orleans is a fire trap and some of the new portions, especially in the negro quarters, are quite liable to burn. The rates generally in the south are higher than in the north, owing to the difference in the construction of buildings.

Again we will find that the rates in the United States are uniformly higher than in Europe because of this same difference. The Illinois fire insurance commission, which investigated the subject of fire insurance, reported on January 4, 1911. From the many good things that were written in that report we quote the following:

"Some interesting statistical data will be found in the testimony of Mr. J. D. Browne, President of the Connecticut Fire Insurance Company. This witness collected and produced before the commission certain facts relating to the construction

of a number of the principal European cities, with an account of the number of fires annually, the methods of their investigation and the administration of laws and ordinances upon the subject. One city will serve as an illustration. Vienna—population 795,787—no wooden buildings—there is no known case in this city where a conflagration has extended beyond the building in which it originated, and few cases are known where it has extended beyond the floor where it originated. This is accounted for by the solidity of the buildings, the strict fire regulations and a fairly good fire department.

One provision of section 46, Fire Regulations, runs as follows:

‘After every fire, the police authorities together with the chief of the fire department are obliged to make a thorough investigation as to the beginning, extension, and effect of the fire and as to the cause and eventually as to guilty persons.’ ”

Nearly all of the dwellings in England and Ireland are built either of brick, stone or clay, and wooden buildings are practically unknown. The fire hazard consequently is much less in those countries than in the United States.

In any discussion of rating we should not overlook the fact that a long period of freedom from fires may be broken at any time by a series of catastrophes. Just as the fire actuary has finally adjusted the loss to the hazard, along comes a conflagration and upsets the entire calculations.

The premium rates have had a very peculiar effect upon the improvement of our cities since schedule rating went into effect. The owners of buildings have been taken into the confidence of the companies and a mutual study of the different hazards and improvements have been made to decrease the danger points. Oftentimes this has been done with very little expense to the owners of the property. Some owners who are careless about adopting proper devices for protecting their buildings against fires have been rated so high that they have been forced

to take a class of companies whose solvency can be questioned. This has usually brought such proprietors to a proper sense of their duty to the public and improvements have been made. Whole towns having a very high rate have altered their methods of construction in such a way that within a few years they have been able to secure a moderate premium rate from first class companies.

The economical effect of a proper rating upon a city cannot be overestimated. While owners of property in cities, having very poor fire equipments, may claim that they have been discriminated against in rate making and frequently appeal to the public through the press and the state legislators; still the good that is evidently wrought by the companies adhering to a uniform system of rating is very great. Such a system redounds to the good of the people and to the companies as well. What affects the one certainly affects the other.

In this connection the effects of open competition among companies are very harmful. A combination of companies is the only way in which the rate can be maintained. Wide open competition always means cutting the rate, lowering the standard of fire hazards, discrimination among insurants, and the loss of the economical factor which comes from improvements. Rates should not be made for the purpose of getting the business, but to measure the fire hazard. A firm adherence to a strict system of schedule rating in the end brings about the greatest good to the greatest number. It is necessary, therefore, both for the public and for the companies that the rating of buildings should be in the hands of thoroughly competent engineers who are not swerved from their paths of duty either by the voice of popular clamor or by the appeals of companies desiring to get business. If it were possible to have every building properly rated and that rate maintained by every company transacting business, the eventual outcome of such a system would be improvement in risk, installation of fire protection

apparatus, lowering of rates, and a conservation of our resources.

There is another fact in connection with this subject which we should not overlook. Fire insurance premiums are not, in any sense, a tax, and fire losses are not a tax. A tax is a compulsory charge collected by the state upon all property with certain well known exceptions. Fire insurance premiums are not a charge that is borne by all the property holders. It is not a compulsory charge nor is it true that the companies selling fire insurance simply determine the loss by fire and pro rate it among all classes of property holders. Losses are not pro rated with the exactness possible in the case of a tax. Classes of property at different times and in different regions show great variations in the loss ratio, and all classes of property at the time of a great conflagration show abnormal loss. This is never true of a tax. The use of the term "tax" was first unfortunately used by Mr. Dean, the originator of the Dean Schedules. It has been the cause of much misconception in regard to the fire insurance business, and has done the companies incalculable harm.

There is a great difference between the cost of an article and a tax. Some people would extend the meaning of the term "tax" to the cost of every article that we use. If the meaning of the word "tax" can be extended in this form, then perhaps the cost of an article is a tax. However, in its true sense, neither the cost of production nor its advance in price should be called a tax. A tax, properly speaking, is a sum raised for the support of the government, and as we have stated, it has peculiarities of its own, which distinguishes it from the cost of production or its increase in price. The production of all articles has its relative cost and this is not true of a tax. To call insurance premiums a tax is to state that the cost of any article is a tax. We never think of calling

the price of a loaf of bread or a pound of meat, no matter how much it has increased in price or what its cost may be, a tax. Neither should this term be applied to insurance. In order to illustrate the manner in which the use of the word tax has been inaccurately applied, we give the following:

Not long ago a gentleman was passing by the window of a store which was very nicely decorated. Turning from the decorations to a person standing near him he said, "These decorations are a tax which we must pay." If the cost of selling an article is a tax, then we do not know but what the whole vocabulary of the merchant may be expressed in the simple word "tax." Fire insurance premiums have their relative cost the same as any form of merchandise and should be classified in the same category with the sale of any other article of production, although, properly speaking, no tangible objects have been exchanged, but intangible objects, such as contracts or contingent promises to pay.

As we have seen, in order to get the best results the rating of various risks must be done in such a way as to favor no one. The standards must be applied to the individual risks in a fearless manner in order to avoid discriminations. This has not been done, and there has been considerable discrimination between classes. This has caused dissatisfaction among policyholders which has finally manifested itself in considerable feeling against the system at present employed.

### *Government Rating*

There has lately sprung up a movement in the United States to take the rating of risks out of the hands of the companies and place it under the control of the state government. Those who favor this plan claim that, if the rate were applied from a non-prejudiced source then the insurer as well as the insured would have justice done him.

The objections to the government taking charge of this branch of the fire insurance business are many and of such vital importance that the project has never met with much favor among insurance departments nor among the officials of the companies. It is argued that if the application of the schedules be placed in the hands of the state governments, or, if state governments had the right to pass upon rates, ambitious leaders, in order to curry political favor, would unjustly cut the rates to such a low figure that the security of the companies would be in danger. Wherever it has been tried, the results have not been favorable. One of the most important things in connection with the fire insurance business is the financial stability of the companies. Rates must be made high enough to pay the losses, provide for the current expenses, set aside an unearned premium liability, return a reasonable profit to the stockholders for their investment, and provide a reserve for a conflagration fund, or a large enough surplus to take care of extraordinary losses. Unless provisions are made in the premium for these elements, the company will soon be on the shoals.

It is argued very strongly that at present the rates of fire insurance companies are scarcely adequate to meet these demands. In proof of this, Law's Fire Insurance tables for 1915 show that the premiums collected from domestic and foreign companies in the United States during the last ten years was \$2,814,870,574, and the losses paid \$1,610,414,659. The ratio of the losses paid to the premiums received was 57 per cent. The commissions paid was \$610,461,149, salaries \$122,580,639, taxes and fees \$72,275,259, and all other forms of disbursements \$225,556,318, making a total of \$1,030,687,475, or 36 per cent of the premiums received. The losses and expenses are, therefore, 93 per cent of the premiums received. The remaining 7 per cent will provide for the dividends paid to stockholders. During the fifty-three



years intervening between 1860 and 1913 inclusive, the rate of dividends was 11.92 per cent of the capital invested. This is equivalent to approximately 5.7 per cent of the premiums received. We have still 1.3 per cent to provide for the increase in the reserve for unearned premium and other liabilities. During our ten year period the increase in liabilities of domestic and foreign insurance companies was \$167,897,859. Our 1.3 per cent will scarcely make more than one-fifth of this deficiency. The remainder must be derived from sources outside of the premium income. The only source from which this can come is the interest derived from investments. If we determine the amount of interest receipts which the fire insurance companies in the United States received during this ten year period, it will be found to be slightly in excess of this amount. The remainder must go to offset the shrinkage in assets, which has been so pronounced during this period.

Mr. E. G. Richards shows that the stock fire insurance companies should have received \$1.125 per hundred dollars at risk in order to cover losses, expenses and 5% profit. During 1912 they actually received 1.08; and in 1913, 1.06. He therefore proves conclusively that the rates are barely high enough to meet the outgo of the companies, and that profits must come from other sources than the premium income.

What is true of all the companies does not necessarily apply to particular companies. Some of the fire insurance companies, through wise management and a fortunate train of circumstances have been able to make money and add a considerable amount to their surplus. Others have met reverses and their annual statements show a gradual loss in surplus. The net result, however, has been that the income of the companies has barely kept pace with the disbursements. This becomes very apparent when our ten year period is lengthened out to fifty years so as to get a good average on conflagration losses. If this be done, the average losses approximates 58% of the pre-

mum receipts. The premium income can make, therefore, only provision for losses, expenses, and dividends. Increase in liabilities and the shrinkage in assets, if any, must all come from sources outside of the premium income, namely, the interest receipts. A business that depends for its existence on funds derived from the accumulation of its assets, which have charged against it very large sums of liabilities that may have to be paid at any time is, indeed, a very precarious one. The proof of this is shown in the large number of companies which are obliged to retire from business every year. They organize, commence business, flourish for a time, and then quit the field as soon as the law of average begins to work. No company should try to enter the fire insurance business unless it has a very large surplus to meet increase in liabilities and tide them over seasons of disaster. It should be borne in mind, in this connection, that the surplus can only be maintained by charging an adequate rate.

Some very learned men in insurance arrive at the conclusion that fire insurance companies make a very large profit on their business. The method pursued is to approach the subject from the standpoint of the underwriting profit. The underwriting profit shows what is done with the premiums received. It is obtained by deducting from the net premiums the increase in the reinsurance fund, the losses, and expenses incurred. It has nothing to do with dividends to stockholders, the conflagration fund, nor the shrinkage in assets. Neither does it include the interest on the assets. It only has to do with things that relate to the premiums. These men claim that the premium income is sufficient to cover the expenditures of the company and take care of the increase in liabilities, and that the interest derived from its assets pays a large dividend to the stockholders.

To illustrate this process of reasoning, suppose that a company was capitalized at \$200,000.00 and that its assets approximated \$2,000,000.00. If the company realized 4% in-

terest on its assets, its interest earnings would be \$80,000.00. If this sum was divided among the stockholders, the rate of dividend would be 40% on the capital stock. That this course of reasoning is fallacious is proven by the fact that if we take our ten year period in which the conflagration losses are included, the underwriting profit accruing to domestic and foreign companies would show a deficiency of \$11,458,311.00. If we add to this the shrinkage in assets, there will only be a modest amount out of the investment earnings to divide among the stockholders. We again arrive at our original conclusion that the profits in the fire insurance business are small, for the nature of the business transacted, and does not compare with the showing made in other lines of business.

If a company were to reinsure its business in force, it would, in all probability, realize not less than 30% commission for it. This commission is called reinsurance commission, but in reality it represents the concealed profit in the premiums in force. In determining the amount of profit, which a company really makes, some mathematicians add the concealed profit to the other profits which the company makes and call it the gross profit of the company. If a company were going out of business, this would be entirely proper, but for a company continuing in business, this gain would never be realized. Then again it is hardly fair to include this item in the profits of a company, because when a company is closed out of business, the receiver-ships, legal fees, and salaries of those winding up the remnants of the business consume a very large part of it. In small companies, the concealed profit will barely pay the expenses of closing up the affairs of the company.

### *Conflagration Reserve*

The importance of setting aside a conflagration fund or increasing the surplus to take care of large losses is shown in the

following table, which gives the great American conflagrations since 1820.

1820—June 10, Savannah, Ga.....	\$5,000,000
1834—December 18, New York City...	17,000,000
1845—July 9, New York City.....	7,000,000
1848—August 10, Albany, N. Y.....	5,000,000
1861—December 12, Charleston, S. C...	10,000,000
1866—July 4, Portland, Me. ....	10,000,000
1871—October 8, Chicago, Ill. ....	165,000,000
1872—November 9, Boston, Mass.....	70,000,000
1876—October 26, Virginia City, Nev...	7,500,000
1889—June 10, Seattle, Wash. ....	6,825,000
1892—October 20, Milwaukee, Wis....	5,000,000
1901—May 3, Jacksonville, Fla. ....	10,000,000
1902—February 10, Paterson, N. J.....	5,000,000
1904—February 7, Baltimore, Md.....	50,000,000
1906—April 18, San Francisco, Cal.....	150,000,000
1908—April 12, Chelsea, Mass.....	6,000,000
1913—September 5, Hot Springs, Ark...	2,225,000
1914—June 25, Salem, Mass.....	13,000,000

The property loss from large fires of over one million dollars in the United States and Canada from 1870 to 1913 approximates one billion dollars, while the total property loss during this same interval was nearly six billion dollars. The ratio of the property loss from large fires to the entire property destroyed by fire is approximately 1-6. This ratio holds approximately true for the insurance loss. This means that about 1-10 or 10% of the premium income each year should be set aside for this purpose. To disregard this precaution invites certain disaster.

Those who contend that the premium is sufficient to take care of the expenditures of the company and that interest accumulations on the assets can be devoted to paying dividends to the stockholders do so for the purpose of showing that the rates are too great and with the idea that the rates ought to be lowered. In view of the closeness of the amount of premiums collected in comparison with the losses and expenses, any considerable amount of reduction of rates would make a large num-

ber of companies insolvent and the great bulk of the business would necessarily have to be transacted by the few. If you study the reports of the different fire insurance companies, you will be surprised at the large number that do not declare any dividends at all. The entire amount of premiums received and the interest accumulations of assets are used in paying losses and expenses. It is true that there are about twenty large companies which make liberal returns to their stockholders.

During the last twenty years there has been a constant decrease in the rate of premiums charged per hundred dollars of insurance. This no doubt has been due in a large measure to improved construction and installation of fire protective apparatus, especially the sprinkler equipment. Sprinklered risks have a very much lower rate of premium than other risk which have not this system. In view of the decrease in premium rates from these sources and the fire loss increasing, arising, no doubt, from congested areas of population, and the expenses, due to the cost of labor, also on the upward trend, the number of companies that can declare reasonable rates of dividends upon their capital stock are constantly becoming less. During our ten-year period the taxes and fees paid the insurance departments amount to about thirty per cent of all the dividends declared to stockholders. While it is true that the rates of commissions have been cut somewhat in the last few years, still the reduction has not as yet been enough to be perceptibly felt by the companies. With many believing that the rates of fire insurance companies are too high, and are constantly agitating the question of a reduction in rates, and with the losses constantly on the increase, the companies are between the upper and nether millstones.

Many believe, among the number of whom is Actuary Miles M. Dawson of New York City, that a solution of the problem could be found in limiting the amount which a company would be obliged to pay on account of large conflagrations. He suggests that the insurance departments should require the com-

panies to set aside a conflagration reserve in much the same way that they now carry an unearned premium liability. In case of a conflagration he holds that the companies should be liable only for the amount of reserve which they carry for this purpose. In view of the attitude of the public on this question and the precedence which has been set in former years by the companies themselves, it is doubtful if this plan could be put into practical use. Our lawmakers have already gone as far as it is possible in this direction in enacting safety fund laws for those who wish to take advantage of it, but companies are very loath to go on record as having accepted its provisions. Most officials of companies believe that it would be better in the long run to charge the higher rate of premium and have an unlimited liability as respects conflagrations.

Fire insurance rates, like those of life insurance, should be made by the companies. Perhaps the form, which has lately come into use, of having a large number of companies associated in a Board or Bureau subject to examination of the insurance department for the purpose of making rates is the most feasible plan yet devised. Co-operation for experience and publicity through examinations would be secured. This plan seems to be favored by the companies, but they seriously object to placing in heads of insurance departments the right to pass upon the adequacy of rates. Fire insurance companies must, like life insurance companies, solve the question of rates. There is no question in the minds of the insuring public in regard to the net premiums charged by a life insurance company; for given a mortality table and the rate of interest assumed, and the net premium becomes invariable. Fire insurance companies must accomplish something of the same results if they wish to hold the sympathy of the policyholders. It is no use to argue that the thing can not be done. As a matter of fact, it can be done, and, when the companies have devised a standard set of rates, which will bear the closest scrutiny of the pub-

lic, and which may be taught in our higher institutions of learning, doing away with every feature that savors of the mysterious, we will hear but little of government rating, or of government control of rating.

### *Co-insurance*

Co-insurance is a form of contract by means of which the insured agrees to maintain insurance to a certain per cent of the value of the property insured, and, by failing to do this, he agrees to become a co-insurer with the company on the risk, and obtain only such a proportion of any partial loss as the amount insured bears to the amount which he agreed to carry. Co-insurance is, therefore, a means of adjusting the cost of insurance to the value of the property. As it affects the rate, it should be studied in connection with the subject of rating.

The New York co-insurance or average clause is the one used in most of the states. It reads as follows:

#### *Per Cent Co-Insurance Clause*

It is a part of the consideration of this policy, and the basis upon which the rate of premium is fixed that the assured shall maintain insurance on each item of the property described by this policy, to the extent of at least . . . . . (     ) per cent of actual cash value thereof, and that failing so to do, the assured shall be a co-insurer to the extent of such deficit, and to that extent shall bear his, her or their portion of any loss that may occur.

Attached to and forms part of Policy . . . . . of . . . . . Fire Insurance Company.

The Wisconsin form is, however, a more correct expression of the co-insurance principle. One of the common forms used in this state is as follows:

#### *Reduced Rate Clause*

At the option of the insured, and in consideration of the reduced rate of premium charged for this policy, the assured hereby agrees to maintain insurance during the life of this policy, upon the property hereby insured, to the extent of eighty (80) per cent. of the actual cash value thereof, and

it is mutually agreed that if at the time of the fire the whole amount of insurance on said property shall be less than such eighty (80) per cent., this company shall, in case of loss or damage less than such eighty (80) per cent. be liable for only such portion thereof as the amount insured by this policy shall bear to said eighty (80) per cent. of such actual cash value of such property.

When this clause is attached to and part of a policy covering more than one item, or division, this clause shall be construed as applying separately to each and every such item or division.

Attached to and forming a part of Policy No. . . . . of . . . . .  
Fire Insurance Company.

The practical working of the co-insurance principle may be shown by an illustration:—Suppose that a man has a piece of property whose inventoried value was \$20,000.00. If the co-insurance contract requires the insured to maintain insurance on the property to the extent of 100% of the value of the property, then, in order to get full indemnity for a loss, the insured would have to insure the property for its full value, or \$20,000. If 90%, then \$18,000; if 80%, \$16,000; if 75%, \$15,000; if 50%, \$10,000; etc. Suppose the required amount of insurance was 80% of the valuation of the property which is the ordinary per cent used in most riders in well protected cities and villages. In order for the insured to get full indemnity for a partial loss, he must keep his property insured for \$16,000.00 or some sum in excess of that amount. In the event of a total loss the insured would get the full amount of his insurance, no matter what per cent of the value of the property was required by the co-insurance contract. The co-insurance clause applies only to partial losses. As these form about 75% to 85% of the entire amount of the losses, it becomes a very important factor in the settlement of losses.

If the per cent of loss is in excess of the per cent used in the rider, then the co-insurance principle becomes inoperative. The Wisconsin form of contract makes this plain.

Suppose that with an 80% co-insurance rider attached to the policy, the insured carries only \$8,000.00 of insurance instead



of \$16,000.00; and, further, suppose the insured suffered a partial loss of \$2,000.00, then the amount of money which he could recover from the company would not be \$2,000.00, but such a proportion of that amount as \$8,000.00 bears to \$16,000.00, or one-half of \$2,000 or \$1,000.00. If the co-insurance rider required 100% of the value, then the amount which could be recovered would be two-fifths of \$2,000 or \$800.00. If the amount of insurance had been \$10,000.00 instead of \$8,000.00 and the co-insurance rider required 80% of value of the property, then the amount which could be collected from the company would be five-eighths of \$2,000.00 or \$1,250.00.

Since the co-insurance clause decreases the probable amount which the insured will receive in partial losses, the question naturally arises why should it ever be used? Let us again resort to an illustration. Suppose that two men each owned one-half of the risk used in the preceding illustration, and each had his one-half insured without any co-insurance clause attached to the policies. Suppose that the men were named A and B, and further, suppose that A insured his one-half for \$8,000.00 at a rate of \$1.00 per hundred, or with an annual premium of \$80.00. Suppose B insured his half for \$5,000.00, paying the same rate as A, or \$50.00 premium. If the property be damaged as the result of a fire to the extent of \$4,000.00, then both A and B would get the same amount for his loss, namely, \$2,000.00, although A paid one and six-tenths more than B. This is neither fair nor equitable, and, if this were allowed by the companies, many would insure for only a small amount, sufficient only to cover the partial losses, and carry the risk against total losses themselves. By this means the company would be caught for a considerable amount on nearly every large risk, and, to make matters worse, the company would find itself with a shrinking premium income. Now, in order that exact justice may be done, there must be some standard of

value on which the insurance cost may be adjusted, and the only proper basis is the valuation of the property.

Suppose in the above illustration that both policies of A and B had 80% co-insurance clauses attached. Now, since A carried insurance in excess of 80% of the value of the property he would be paid full indemnity for his loss, or \$2,000.00. B would receive only five-eighths of the \$2,000.00 loss, or \$1,250.00. Then the losses paid would be in proportion to the premiums paid by each of the insurers, for

$$80 : 50 :: 2000 : 1250$$

and both A and B would be paid according to their respective contributions.

Instead of requiring the insured to maintain a certain amount of insurance in order to carry out the co-insurance principle, the same ends may be attained by adjusting the rate. The one is a mathematical equivalent of the other. If this be done it would avoid all the friction and complaints that ordinarily come through the settlement of losses with the reduced rate contribution clause. If the insured be allowed to exercise his option and take the lower rate with the co-insurance clause or the higher rate without the co-insurance clause, he can find no fault with the results.

The problem was practically first solved by Mr. F. C. Moore and printed in his book, entitled "Fire Insurance and How to Build", to which we have previously referred. He has outlined a plan for determining the value of the co-insurance principle, based upon the experience of the company. The saving in losses through the reduced rate contribution clause was determined for different values of the clause such as 40%, 50%, 60%, 75%, 80%, 90%, and 100%. Mr. Moore states the result of his investigation in the following rule:

"A deduction of one-half of one per cent for each per cent of co-insurance in excess of 50%, not exceeding 15% in all; and an addition of one per cent for each per cent that the insurance is less than 50% of the value of the property."

Under the rule an 80% co-insurance clause would bring about a reduction of 15% in the rate, the 60% clause would give a reduction of 5% and a 40% clause would give an addition of 10%. This method of determining the value of the co-insurance clause was used until quite recently and even to-day is used extensively in unprotected towns and cities on frame structures.

Very recently the National Board of Fire Underwriters has issued a new schedule of reduction for the reduced rate contribution clause. This has practically taken the place of the Moore's rule in nearly all large cities and protected towns and villages. The new schedule makes the deduction applicable to the various classes of hazards in cities divided on the basis of their deficiency as classified by the National Board and which has been given in full under the subject of "Rating." This schedule is as follows:

## ESTIMATES OF THE RELATIVE VALUE OF THE REDUCED RATE CONTRIBUTION CLAUSE UNDER SPECIFIC FORM POLICY.

	Deduction from Schedule Estimate for									
	50% CLAUSE		60% CLAUSE		70% CLAUSE		80% CLAUSE		90% CLAUSE	
	Bldg.	Cont.	Bldg.	Cont.	Bldg.	Cont.	Bldg.	Cont.	Bldg.	Cont.
1. Fire-proof construction (all steel work protected)										
(a) In Cities and Towns having Municipal Protection of Classes 1, 2, 3, 4 and 4½...	40%	None	48½%	None	56%	24%	60%	30%	64%	35%
(b) In Cities and Towns having Municipal Protection of Classes 5 and 6.....	30%	None	37½%	None	44%	None	50%	20%	55%	25%
Note—When the entire contents of an occupancy of a building as described under Item 1 are incombustible, apply deductions for contents of that occupancy as per Item 2.										
2. Incombustible construction (steel work unprotected) containing only incombustible contents.										
(a) In Cities and Towns having Municipal Protection of Classes 1, 2, 3, 4 and 4½...	30%	None	37½%	25%	44%	32½%	50%	39%	55%	45%
(b) In Cities and Towns having Municipal Protection of Classes 5 and 6.....					34%	22½%	40%	20%	45%	35%
3. Brick, stone or concrete construction (not fireproof), including incombustible construction with brick, stone or concrete walls.										
(a) In Cities and Towns having Municipal Protection of Classes 1, 2, 3, 4 and 4½...					20%	None	25%	15%	30%	20%
(b) In Cities and Towns having Municipal Protection of Classes 5 and 6.....							10%	None	15%	None
4. Frame, iron-sheathed frame, skeleton iron-clad, brick veneered; hollow concrete block, hollow tile or hollow-block walls, with or without 4-inch brick facing; and skeleton steel or metallic lath and plaster walls, including incombustible construction with hollow concrete block, tile or skeleton steel walls.										
(a) In Cities and Towns having Municipal Protection of Classes 1, 2, 3, 4 and 4½...							10%	10%	15%	15%

## REDUCED RATE CONTRIBUTION CLAUSE—Continued

	Deduction from Schedule Estimate for									
	50% CLAUSE		60% CLAUSE		70% CLAUSE		80% CLAUSE		90% CLAUSE	
	Bldg. Cont.		Bldg. Cont.		Bldg. Cont.		Bldg. Cont.		Bldg. Cont.	
5. Live and rolling stock.										
(a) In barns and sheds	.....		.....		24%		30%		35%	
(b) In pens	.....		.....		24%		30%		35%	
6. Lumber Yards (including sheds and warehouses therein)...	.....		.....		.....		10% 10%		15% 15%	
7. Incombustible contents, as defined in the items in the Alphabetical Occupancy Lists of the rules for the measurement of the relative fire hazard of the class.										
(a) In brick, stone, concrete, hollow concrete block or tile buildings (not of fire-proof or incombustible construction) and in buildings with skeleton steel or metallic lath and plaster walls with combustible floors and/or roofs	.....		.....		22½%		29%		35%	
(b) In frame, iron-sheathed frame, brick-veneered and skeleton iron-clad buildings	.....		.....		15%		20%		25%	
Note—If building is of fire-proof or incombustible construction, apply deductions as per Item 2.										
8. Tornado, Cyclone and Windstorm insurance not to apply to farm property	.....		10% 10%		15% 15%		20% 20%		25% 25%	
(a) For credits applying under new tornado rules see section (K) of amended rule No. 101.										

Note 1.—Risks located more than 400 feet from nearest double hydrant (public) or located more than one mile from public fire department house should be treated as in cities or towns of municipal protection of Classes 5 and 6.

Note 2.—When parts of a building are of different construction, the average of the above deductions for building and the average of the above deductions for contents should be taken, except that when the floor area of a part of a building is less than 25 per cent of the total floor area of the entire building the construction of such part should be treated as negligible.

It will be noticed that the reduced rate clause of the Wisconsin policy form states:—"At the option of the insured, and in consideration of the *reduced* rate of premium charged for this policy, etc." The Wisconsin insurance laws for 1915 requires that the rate for insurance, with and without the co-insurance clause, shall be specified upon every policy. It would be manifestly unfair for the company to charge the full rate of premium and in addition attach a co-insurance clause to the policy.

### *Valued Policy Laws*

Fire insurance policies are of two kinds,—the *open* and the *valued*. An open policy is one in which the sum to be paid is left to be determined in the event of a loss. The face of the policy fixes the maximum amount, beyond which the company is under no circumstances liable, and in the event of loss it is open to the company to show that the damage was in fact less than the amount stated in the policy.

A valued policy is one in which the amount of the indemnity to be paid in the event of loss is fixed by the terms of the contract. The value of the property insured is conclusively agreed to by the parties and no question can be raised, after a loss, as to its value. The only question that can be asked is,—“Did the loss occur”?

The laws of some states forbid the use of the co-insurance clause. Such laws are called valued policy laws. As we have seen in the foregoing illustrations, the co-insurance clause is very essential in order to preserve equity between different insurers. All such laws should be repealed and the Wisconsin principle adopted. The insured can then have his option of paying the higher rate and not using the clause or by taking the clause, have the advantage of the reduced rate. Besides, valued policy laws leads to over-insurance and incendiarism

and the policy ceases to be a true contract of indemnity. Nearly all valued policy laws embody the following principle:

“Whenever any policy of insurance shall be written to insure real property, and the property insured shall be wholly destroyed, without criminal fault on the part of the insured, or his assigns, the amount of the insurance written in such policy shall be taken conclusively to be the true value of the property when insured and the true amount of loss and measure of damages when destroyed.”

## CHAPTER VIII

## FIRE PREVENTION

In connection with the study of hazards, fire prevention follows as a logical sequence. We have previously referred to the great waste of wealth caused by fire. It should be impressed upon every individual that property once consumed is lost forever. It is true that other buildings may be built upon the same spot which are far superior in every respect, still the investment in the original building is lost forever and the new building built from the money of the insurance companies is derived from a distribution of wealth already in existence. A new city may be built upon the ashes of the old, still the money which pays for this work is derived from others. The building of new buildings under such circumstances does not create wealth, but simply takes it from one place and distributes it in another.

In our opening chapter we mentioned the fact that the fire waste in this country was approximately \$200,000,000 a year. A large part of this enormous sum could be saved if proper care were taken to prevent fires. It would seem that the waste of such a large sum is well worthy of the consideration of our foremost scientists and statesmen. If we continue to lose at the same rate for the next five years, the United States will have lost in fire and smoke a billion dollars.



We have wondered how many comfortable homes this would build for the poorer classes of our cities? We will not stop, however, to speculate upon the great amount of good that might be done with a billion dollars, but leave it to those who are careless about fires.

The National Board of Fire Underwriters of New York printed an address by a special committee on the Conservation of Utilized Resources from Destruction by Fire. The suggestions that were offered by this committee are well worthy of careful study. They are as follows:

1. That the public should be brought to understand that property destroyed by fire is gone forever and is not replaced by the distribution of insurance.

2. That the states severally adopt and enforce a building code which shall require a high type of safe construction, essentially following the code of the National Board of Fire Underwriters.

3. That municipalities adopt ordinances covering the use and keeping of explosives, especially inflammable commodities and other special hazards such as electric wiring; the storing of refuse, waste, packing material, etc. in buildings, yards or areas; and see to the enforcement of such ordinances.

4. That the states severally establish and support the office of Fire Marshal, and confer on the Fire Marshal by law the right to examine under authority and enter premises and make arrests, making it the duty of such officer to examine into the cause and origin of all fires, and when crime has been committed, requiring the facts to be submitted to the grand jury or proper indicting body.

5. That in all cities there be a paid, well disciplined, non-political fire department adequately equipped with modern fire apparatus.

6. That an adequate water system with proper distribution and pressure be installed and maintained.

In the majority of large cities a separate high pressure water system for fire extinguishment is an absolute necessity to diminish the extreme imminence of general conflagrations.

In addition to the above suggestions made by the National Board of Fire Underwriters there are some others which are of a more personal nature but still of great importance. Among these we mention the following:

Avoid placing in a closet or in a spare room articles which will produce spontaneous combustion. Some substances possess the property of absorbing oxygen to a very high degree. This always generates a considerable amount of heat. Among the substances that have this peculiar property are finely divided coal, charcoal, coal containing iron pyrites, carbon bisulphide, and phosphorous paladium. There are some conditions which favor spontaneous combustion such as wood near a hot steam pipe, or wood in contact with coal, flax, hemp, rags, leaves, cocoanut fiber or sawdust upon which oil has been spilled.

Certain manufacturing processes are conducive to spontaneous combustion. The air of a room may become saturated with vapor of certain solids or liquids under favorable conditions for evaporation, and, if the ignition point of these vapors be very high a flash of fire, will result. If there should be present a considerable quantity of lint or other solid in a finely divided condition, the intensity of the flash will be increased. Petroleum and its distillates, benzine and naphtha, evaporate very readily, and the vapors have relatively low kindling points. Nitric acid or sulphuric acid united with wool or straw or some of the essential oils present conditions encouraging spontaneous combustion.

Among the more common things which produce fire, the common match is hardly without a competitor. This is especially true of the parlor match. When the head of the match is scratched it explodes and the flaming pieces fly in dif-

ferent directions. When they drop they often smolder for a time and set fire to waste paper, sweepings, lace curtains and the clothing of women and children. Some times the match breaks and the head is allowed to light in some place where a person walking will step on it and ignite it. This is the cause of a great many losses by fire. Sometimes matches are left in the drawers of bureaus or in other similar receptacles, and coming in contact with other hard substances, when the drawer is suddenly opened or closed, the matches are ignited and a fire results. Sometimes matches are allowed to lie around on the stoops of buildings where the sun ignites them. This is especially true if there is a bubble in the window glass or a water bottle, or perhaps the bulb of a pair of spectacles. The head of the match contains phosphorous, chlorate of potash, resin, whiting and powdered flint held together by glue. A little heat starts the fire in the phosphorous. This is usually done by rubbing the particles of flint in the head, which ignite the phosphorous. The chlorate causes the explosive sputtering by giving off the oxygen. This fires the resin in the head and the paraffin with which the stick has been soaked catches fire. A better devise for spreading fire could not well be imagined. Children should never be allowed to carry matches in their pockets. The common match and the parlor match cause the loss of over a million dollars worth of property every year; possibly the lives of many people. The whole solution of the match question depends upon the use of the safety match. This cannot be ignited unless it comes into contact with the box which holds the matches.

Another cause of fires is the common kerosene lamp. In our cities the kerosene lamp is not ordinarily used, except in the outskirts and suburban places. It is said that the turning over of a lamp caused the great fire in Chicago which destroyed millions of dollars worth of property. Every year a large number of

fires are caused by this common piece of furniture. Sometimes in country districts wood fires are built in the stove by turning the oil out of the lamp on to a low burning fire. There is great danger in this, and many people lose their lives every year through carelessness while handling the lamp.

The common cooking stove is also a prolific source of fires. Wood stoves are frequently placed too near adjacent walls, and after a time the wood becomes so dry that it ignites from extreme heat. A great many fires are caused by filling the oven with kindlings and heating them so that they take fire. Wood is frequently put in the oven to dry over night and it becomes ignited and the house takes fire, and the people wonder what caused the fire. The floors under the stoves are frequently not protected, and when the stove becomes very hot they sometimes ignite. The old fashioned fire place, strange to say, was not as dangerous as the modern stove. In the older days but very few fires were caused from the open fire place. However, some of the more modern grates with asbestos logs soaked in petroleum are frequently very dangerous.

We have referred to chimneys as being the source of many fires, and also to stovepipes and soot. Ash heaps and coal piles are the causes of many fires. Ashes are often thrown into wooden boxes and against sheds or fences. These ignite and burn buildings which are connected with them. All ashes contain a great deal of charcoal which will ignite, and if covered up with ashes will remain live coals for a long time. Ashes should never be placed in any wooden receptacle, but should always be kept in metal cans. If ashes are placed in the cellar they should be on clean cement floors.

Another danger that is commonly overlooked occurs from leaking gas. Gas pipes are not always absolutely tight, especially in the joints. Gas may leak out of these places and permeate a room. A lighted match causes rapid combustion.

Sometimes Christmas trees have caused fires, but we think that this is largely overestimated. If Christmas trees are lighted with candles, some means of putting out a fire should be near at hand.

Gasoline and gasoline stoves have been prolific means for causing fires. This is also true of trying to kill insects by means of gasoline.

Acetylene gas if used in residences for lighting purposes should be carefully attended to, as the damage from violent explosion and fires from the use of this is very great. Not long ago, near Milwaukee, Wisconsin, a large dwelling was blown to pieces through the use of acetylene gas.

Electric wiring at the present time is one of the greatest fire producers. Many of the largest fires have occurred from faulty wiring. As the use of the electric lights in residences and stores has increased, the number of fires have kept pace with the use of this form of lighting. Electric wiring should only be done by men who are experts in the business, and all connections should be carefully inspected. The National Board of Fire Underwriters has issued quite a large book of instructions on the subject of electric wiring. No person should install an electric system for lighting purposes without being familiar with the rules and regulations prescribed by the engineers working for this board.

There should always be some means close at hand for putting out ordinary fires. Inside fire alarms should be in every modern building and dwelling. These are of many kinds. Some are connected with the sprinkler systems, but in any event it is essential that the alarm be sent to the fire department before it has gained headway. Chemical fire extinguishers, plenty of hose and connections should be in every building. Automatic sprinklers can be installed quite cheaply. These also should be in every large building and residence. The unsightly

pipes may be covered up or painted, but the head of the sprinkler should not be treated in this way. This should be free from all paint and should be placed in such a position that it will open at a moderate temperature, possibly 160 degrees. The modern buildings should contain what is known as fire retardants, such as wire glass in metal frames, fire doors and shutters, and fire retardant paints. A great deal of good can be accomplished by having private fire companies and frequent fire drills.

### *Egress From Burning Buildings*

A very large number of people lose their lives every year owing to insufficient means of escape from burning buildings. This is but little else than criminal neglect on the part of the people and the officials of our state and city governments. State buildings, such as theaters, factories, department stores, hotels, asylums, sanitariums, school houses, libraries, art galleries, hospitals, homes for the aged, homes for children, houses of correction, state prisons, and public halls should never be built unless ample provision is made for egress of the inmates in case of fire. Nearly all of the fatal accidents coming from fires originate from this source. Any person building a building without making provision for this necessary feature should be held criminally liable in case of accident, and any state or city official approving such a building and allowing it to be occupied contrary to the building codes of the state and the city should be held equally liable.

Some of our states have no building codes and no commission or body in which the enforcement of statutes along this line is vested. The state of New York and the state of Wisconsin have taken advance steps in making this necessary provision. In 1913 the Legislature of Wisconsin passed a law making it a duty of the Industrial Commission "To ascertain facts

and order such reasonable standards, rules or regulations for the construction, repair and maintenance of places of employment and public buildings, as shall render them safe." Carrying out this provision of the law the Industrial Commission of Wisconsin in 1914 issued a state building code and no person should attempt to build any of the above mentioned buildings without consulting this code.

The egress from buildings is usually made by means of interior stairways, exterior stairways, elevators, hallways, fire escapes, smoke-proof towers, balconies and other horizontal openings. In many of our buildings to-day the interior stairways are left open and they are made of inflammable material, largely of wood. To make matters worse some of these stairways are wound around elevator shafts and hoistways. In the case of fire these stairways form a flue for the rapid spread of the flames upward, cutting off all egress from the building and the occupants are caught without any means of escape. In addition to this, the winding form of stairway causes great confusion in making the descent and frequently leads to panic with consequent disaster at the bottom of the flight. Sometimes these stairways are so hidden from view that their presence is not noticed until it is too late to make an escape from the building. All stairways should be enclosed by fire-proof partitions.

Doors leading to a stairway or leading out of a building, where five or more persons are employed, should always open outward. The stairway should also extend from the basement to the top of the building with fire resisting partitions, cutting off the flames and smoke from the stairway with the opening extending to the top of the building, so that the flames and smoke may pass upward instead of downward. All stairs should not be less than 44 in. in width and should be wide enough so that two persons may descend the stairs com-

fortably. Every tread should be at least 10 in. wide and the rise not over  $7\frac{3}{4}$  in. high. Every stairway should have a hand-rail in order that people may prevent themselves from falling in case of a rush from those behind.

Instead of having interior stairways the better plan is to have exterior stairways. These should be built of fireproof material which should lead out into the street or alley-way.

Elevators should be included in fireproof partitions extending 3 or 4 ft. above the roof. All elevator openings on floors should be enclosed with fireproof wire glass. The dumb-waiter shaft, the vent and light shaft, the pipe and dust shaft, and hoistings should be enclosed in the same manner as the elevator shaft. Hallways should be made large and the sides enclosed by non-inflammable material. The doors to the hallways should be standard fire doors and should never be locked. They should always open outward and they should never bar the entrance to a free egress from the building.

The common fire escape instead of being a means of escape has often proved a veritable fire trap. Mr. Rudolph P. Miller, in Volume I of the Preliminary Report of the New York State Factory Investigating Commission, states his objections to the use of the fire escape as a means of exit from a burning building in the following language: "All outside fire escapes are open to the following objection: Inmates are not accustomed to their use and do not generally seek them except as a last resort. They do not allow of a quick and ready means of escape, as persons are unaccustomed to them and will move along slowly, thus delaying those who are following. In wintry weather they are liable to be obstructed by snow and ice, and when covered with sleet or ice become unsafe and dangerous. Very often they are rendered useless because of smoke and flame issuing from the windows at which they are placed. The means of getting from the lowest balcony is generally the



least satisfactory of the entire equipment and being at a point where it is most needed greatly delays quick egress. They are liable to be blocked by being used as storage platforms, and no amount of inspection can entirely prevent this in crowded districts. Numerous instances may be found in the public press in which inmates seeking fire escapes have failed to know what to do and have waited for the fire department to come and take them down. On account of the contracted dimensions of these fire escapes large persons have sometimes found difficulty in making proper use of them. The fire department has generally advocated their use, but it will be found that this advocacy is based on a desire to have a means of getting into the building; but if desirable for this purpose, then they should be provided as such and not offered to the inmates as a satisfactory means of egress."

If fire escapes are used they should be made of wrought iron or soft or medium steel. They should be designed and constructed to carry a live load of at least one hundred pounds per square foot of horizontal area over the entire fire escape. Every fire escape should be provided with a railing and it should extend to within a few feet of the ground. All outside fire escapes should be covered with a roof in order to prevent steps from being covered with ice and snow. The exit from fire escapes should lead into an open court, an open street or a used alley-way. Much danger arises from having the terminus of the fire escape leading into a close space from which the inmates of the building cannot escape. If there is a means of passing from the roof of one building to that of another the fire escape should be extended to the roof. All platforms should be made of sufficient size to admit of several persons standing on them. Enough fire escapes should be placed in different parts of the building so that there will not be an overcrowding of inmates at the entrance to any one of them.

Fire escapes are not without value but a more recent device is being used in all of our newer structures. The smoke-proof tower, known as the Philadelphia Fire Tower, consists of a stairway enclosed by fire-resisting material, separated from the interior of the building, except for an exterior balcony at each floor level, which forms a means of communication to the outer air, between the tower and the interior of the building. Such fire escapes have no direct communication with the interior and the danger from smoke is reduced to a minimum. Interior or covered vestibules may take the place of the exterior balconies. Such vestibules should open to the outer air by means of openings in the exterior wall, extending from floor to ceiling. Any smoke that may chance to enter the tower from the interior of the building thus escapes directly to the outer air. Every building over 100 ft. in height should have at least one or more of these towers.

Horizontal openings consist of balconies leading from one building to another through partition walls. These walls should be made of fire-proof material. The horizontal openings offer one of the most efficient means of making an escape from a burning building as the danger from crowding and panics are less liable to occur in passing through them.

The doors leading to all openings for egress of a building should never be locked nor barred in any form; they should swing easily, allowing a free access to the stairway or other opening from the building. If fire escapes lead from windows the windows should be made so as to swing outward freely. All stairways in hotels and other public places should be well lighted and the places of exit should be properly shown by an electric sign at least 8 in. in size.

In the residential parts of the cities and in homes far removed from the city, oftentimes the only means of reaching the roof of the building is by means of the common ladder. Every owner

of a home in the country or at watering places should have one of these simple instruments at hand. Not long ago two children were burned to death in a residence on the shores of Lake Geneva, Wisconsin, because it was impossible to find a common ladder before the building was consumed.

In the country districts there is a considerable danger from lightning. This may be avoided through the use of the lightning rod. Hay barns, horse stables and dwelling houses should be protected with this simple device. They should, however, be correctly installed and the lower end should not terminate in dry sandy soil. With sufficient height of rod and proper installation they form a very efficient means of preventing fires due to lightning.

Above all the best means of preventing fires is to educate the people to a sense of their responsibility on this question. Much good has been done by having fire prevention day in all of our schools. If we can teach the children who attend our public schools the great need of being careful in regard to producing conditions which will create fires, we will have done much towards solving the problem. Some states have already installed courses of study in fire prevention. If this cannot be done, morning talks in our schools should be made by the teachers in the various grades and the high school. A thorough campaign, along the line of better construction, by the state and city ordinances would be the means of reducing the fire waste in this country from its present enormous sum.

## CHAPTER X

## FIRE INSURANCE ACCOUNTING

The accounting system of a fire insurance company is very large and voluminous. In order to get a clear understanding of the different records and books and their general purposes in the system, it is essential that one should come in contact with the work and the entries to be made. This knowledge is best acquired in the office of a fire insurance company.

As a preparation for the work, one should be thoroughly grounded in the elements of bookkeeping and possess a thorough knowledge of corporation accounting. The successful auditor should have a training broad enough to cover a course in economics with special reference to insurance, banking, railroads, and public utilities; and an elementary knowledge of law especially those divisions relating to corporations, stocks and bonds, real estate transactions, including mortgage loans, negotiable instruments and insurance. If one could have the advantage of a course in a college or university covering the work outlined in a school of commerce, supplemented by a course in insurance and in elementary law, it would be an ideal training for a person who desired to become an insurance auditor or secretary of a fire insurance company. With such a training, the auditor could be an adviser and counselor of the officials in regard to the general status of the business, and with faithful service might look forward toward the secretaryship

of the company, and possibly the management. A large number of men, who are now executive officers, have worked their way up from the bottom rung of the ladder.

It frequently happens that the work of the auditor is greatly underestimated. Some officials feel that the only qualification that he should possess is the ability to write legibly. Nothing could be further from the true facts of the case. The reputation of the company comes largely from the opinion reflected from the various departments of insurance in the different states in which it transacts business. This is especially true of the state in which the home office of the company is located. If that opinion is adverse to the company's methods, its reputation is sure to suffer. The auditor can do much to make a favorable impression upon the examiners of the departments of insurance. Well kept records and the ability to explain all business transactions entered in the books or found among its files will go a long way toward bringing favorable comment from insurance departments. Some of the officials may think that the chief work of the company is to get business. Business is essential to the success of a company, but the management of the results of this business is not to be overlooked. A close watch must be kept of every detail in order to produce a profit over and above the losses and expenses. This is the work of the auditor. It is very important, and should not be minimized or underestimated.

Seemingly every company has a different accounting system. There are scarcely any two companies that have the same kind of books nor any uniformity in the subject-matter which they contain. Of late years the annual statement blank, known as the convention blank, has had a considerable influence on the more recent systems installed, but, in the older companies, the systems employed in the beginning are still in use. When the clerks and officials become used to a system of accounting, and

they fall into the daily routine of the work, and are aware of the end from the beginning of a transaction, it is difficult to get a change in the accounting system. This is not altogether an unmixed evil, for a poor system of books kept neatly and accurately is far better than an up-to-date accounting system kept in a careless, slipshod manner.

Foreign companies usually use the same systems employed in the home office of the mother country, modified somewhat to meet American conditions. The English companies have the best systems and the best accountants among the foreign companies. Their books and records are models of neatness and accuracy. There are fewer companies from Germany than from England, but the German accountant is very faithful and painstaking and his records are always presentable and accurate. The combination, however, of the German and the English script detracts somewhat from its legibility. Our American auditors could study with profit some of the methods employed by the English and German accountants.

The accounting system of every insurance company should have two predominating features. It must show at a glance the general status of the business and it must admit of being audited quickly. If either of these features is wanting the system is a failure no matter how attractive it may be otherwise. This implies that the ledger titles employed must be in harmony with the general statements of the company, and the face of the ledger must be condensed to a single page. In order that the books may be audited quickly every item must be cross indexed in such a way that its source can be traced without difficulty.

A record of the final balances of the ledger gives us the trial balance book. The entries in this book should be made at the close of each month and the results of the ledger from month to month should be accumulative, representing the growth of the business under each ledger title. A suggestive set of ledger

titles that might be used in a fire insurance company and the manner in which the items could be treated in the ledger are shown below:

1. *Gross Premiums*:—The credit side of this account should show the gross premiums written, and all additional premiums because of an increase in the premium rates. The debit side should show return premiums on cancellations, and all rebates and reductions of premiums.
2. If the company transacts marine, hail, tornado, sprinkler leakage, or other forms than fire, appropriate ledger titles should be used for each classification.
3. *Interest Account*:—Credit this account for all interest received, writing in the explanatory column of the ledger the form of interest entered. Debit this account for all interest paid out for the use of borrowed money and for accrued interest on mortgages and bonds purchased.

*Note*:—If the assets of the company are large it is best to use a separate ledger title for interest on mortgage loans, interest on bonds and dividends on stocks, interest on certificates of deposits and interest from all other sources.

4. *Rents*:—Credit this account for all rents received, and debit the account for rents paid out. Rent of space of home office building should be entered on both the debit and credit side of the account if entered at all in the ledger.
5. *Profit and Loss Account*:—Debit this account for all items charged off and debts finally found to be worthless, and credit the account for any receipts coming from items that have previously been charged off.
6. *Conscience Fund*:—Credit this account for all sums received from an unknown source.

7. *Reinsurance Account*:—Debit this account for gross premiums ceded to other companies, including all treaty companies, and credit this account for reinsurance gross premiums cancelled and all cash paid on reinsurance account.
8. *Losses and Claims*:—Debit this account for all losses and claims paid, and credit this account for all reinsurance recoveries, refunds, and amounts received on judgments rendered as the result of subrogation.
9. *Loss and Claim Expenses*:—Debit this account for all traveling expenses, legal fees, cost of arbitrations, and suits at law connected with the settlement of claims. Credit the account with all traveling expenses returned and any other sum connected with loss expenses which have been refunded.
10. *Commissions*:—Debit this account for all commissions, brokerage to agents and reinsurance commission on premiums purchased. Credit the account for return commission on premiums cancelled and return reinsurance commission on reinsurance premiums cancelled.
11. *General and Special Agents*:—This account is divided into two parts—salaries and expenses. Debit this account for all salaries, traveling expenses, hotel bills and other expenses, paid to general and special agents, writing in the explanatory column the words “salary” or “expenses,” according to the entry made. Advances to agents should be treated in a similar manner. Credit this account for all refunds and other charges made against general and special agents.
12. *Salaries of Officers and Home Office Employees*:—The salaries of officers and of home office employees should be entered in the ledger separately, writing in the appropriate term in the explanatory column. Debit



this account for all salaries paid to officers, home office employes, and fees of members of the board of directors and the various committees of the company. Credit this account for all refunds and other receipts from this source.

13. *Underwriting Boards and Tariff Associations*:—Debit this account with all expenditures for ratemaking purposes, tariff associations and other contributions for ratemaking purposes. Credit this fund for any overpayments made to associations or other persons of this account.
14. *Taxes*:—Debit this account for all state taxes on premiums, fire marshal taxes, fire department dues, agents' licenses, municipal taxes and any other form of taxes connected with the premium account which have been paid or otherwise disposed of. Credit this account with any refunds from insurance departments for overpayments of taxes.
15. *Dividends*:—Debit this account for all dividends declared to policyholders, and credit the account with any dividends that have not been paid at the time the annual statement is made.
16. *Postage, Telegraph, Telephone, Freight and Express*:—Debit this account for all postage, telephone bills, telegraph bills, freight bills and express bills which have been paid or otherwise disposed of. Credit this account for any refunds coming from these sources.

*Note*:—In the explanatory column of the ledger use the correct term to designate the form of expenditure entered.
17. *Real Estate Expenses*:—Debit this account with all expenses and repairs on the home office building or any

other buildings or grounds belonging to the company. Credit this account for any receipts coming through sales of furniture and fixtures and from any other source.

18. *Miscellaneous Expenses*:—Debit this item for all sums paid for lighting, heating, janitor service and care of the home office building, or for any other expenses which cannot properly come under any other ledger title. Credit this account with any receipt which would be an offset to the expenses included under this title.

19. *Real Estate*:—Debit this account for the book value of all real estate owned by the company or any adjustment of book value which increases the book value. Credit this account for all depreciation in real estate owned by the company, for all sales and real estate otherwise disposed of, and for any adjustment that would decrease the book value.

*Note*:—If there are any mortgages on the real estate owned by the company it should be credited to this account.

21. *Mortgage Loans*:—Debit this account for all real estate mortgage loans, and credit this account for all mortgage loans which are considered worthless or which are second liens, or for any partial loan which cannot be collected in full.

22. *Bonds and Stocks*:—Debit this account for the book value of all bonds and stocks and any adjustment which would increase the book value. Credit this account for the book value of all bonds and stocks sold or otherwise disposed of and for all depreciation in the book value.

23. *Cash*:—Debit this account for all cash in the bank not on interest and all cash in the form of certificates of deposit on interest. Credit this account with the disposal of any of the certificates of deposit or for any sums withdrawn from the bank.
24. *Agents' Balances*:—Debit this account for all sums due the company from agents as shown by the agents' ledger, and credit this account for all sums due to agents from the company as shown by the agents' ledger.
25. *Bills Receivable*:—Debit this account for all premium notes taken for premiums on policies issued, and credit this account for all premium notes that are paid or otherwise disposed of.
26. *Furniture and Fixtures*:—Debit this account for all sums paid out for furniture and fixtures, and credit this account for all sums charged off for depreciation in value.
27. *Capital Stock*:—Credit this account for the par value of all capital stock issued to stockholders, and debit this account for all stock which has not been paid for in cash.
28. *Surplus*:—Credit this account for all surplus which the company possesses at the time the statement is made.

Nearly all the important items of liabilities are non-ledger items. This includes such items as unpaid losses, unearned premiums, conflagration reserves and other items of liability which are not included in the ledger. The value of these items are determined through inventories. The manner in which these are determined will be taken up in connection with the subsidiary records in which they are entered.

*General Rule for Journalizing*—One of the most important rules in connection with insurance accounting may be sum-

marized as follows: *Credit all items of income or any item which increases the assets; debit all items of disbursements or any item that decreases the assets; debit all items of ledger assets; and credit all items of ledger liabilities.*

With this above rule firmly fixed in mind, and, with a knowledge of the different items that go to make up the income, the disbursements, the assets and the liabilities of the company, one cannot very well err in journalizing the various accounts shown in the above ledger titles, nor in carrying these accounts to the proper side of the ledger titles.

The different books and records that are kept in a modern up-to-date insurance office are as follows:

Policy Register	Collateral Loan Register
State Record Sheets	Real Estate Register
Agents' Register	Bills Receivable Register
Agents' Ledger	Dividend Register
Trial Balance of General	Stock Certificate Book
Ledger	Stock Certificate Ledger
Agents' Trial Balance	Check Register and Bank
Cash Book	Book
Journal	Monthly Statement Register
General Ledger	Yearly Summary Register
Cash Remittances from	Daily Report Files
Agents	Agents' Account Files
Loss Register	Loss Files
Loss Paid Register	Voucher Files
Unpaid Loss Register	Mortgage Loan Files
Cancellation Register	Correspondence Files, General
Reinsurance Register	Board of Directors, Minutes
Bordereaus	of the
Expiration Register	Finance Committee, Minutes
Unearned Premium Register	of the
Mortgage Loan Register	
Bond and Stock Register	

*The Use of Books and Records*

The daily reports are entered in the policy register by states and agencies arranged alphabetically. This shows the policy number, the renewal number, name of the agency, name of the insured, the commencement and termination of the risk, the term, the rate, the amount of insurance and the premium which is usually classified into terms of one, three, or five years. Most of the companies pay a graded commission of fifteen per cent per hundred for one year risk, twenty per cent per hundred for three year risks and twenty-five per cent per hundred for five year risks. In other companies the commission is paid at a flat rate of twenty or twenty-five per cent. If the graded form of commission is used columns are formed in the policy register headed fifteen per cent commission, and the premiums of one year risks are entered in this column. In a similar manner the premiums for three year risks and five year risks are also entered in their appropriate column. This arrangement makes it possible to determine at the close of each month the amount of business that the agent has transacted at fifteen per cent commission, twenty per cent commission and twenty-five per cent commission. At the same time the rates are classified into one year risks, three year risks, and five year risks. There is a great variation in the manner in which these entries are made by different companies, each one seemingly having its own peculiarities. We would again suggest that the amateur accountant consult the policy register direct in order to get a working knowledge of it. In addition to the account on premiums some policy registers also make similar entries for cancellations, the return premiums being classified according to terms or what is practically the same thing according to commission rates. Some of the companies enter the amount of cash received from the agents during the month in the policy

register. Others do not use the policy register but enter all sums received from agents in the remittance book. If the company does not enter the cancellations in the policy register it is entered in a similar manner as the premiums in the cancellation register. This plan is much to be preferred for many reasons, but principally owing to the fact that the earned period can always be shown. This makes it possible for the auditor to determine quickly the unearned portion. If the company cancels a policy it is cancelled pro rata, but if the insured cancels the policy it is cancelled according to the short rate table.

At the close of each month the amount of business transacted in each agency is summed and carried to the state record sheets. These sheets show the amount of risk, premiums, commissions and cancellations according to states and agencies again arranged alphabetically. The amount of insurance written, the premiums, commissions, and the cancellations are again summed for all the agencies in the various states in which the company transacts business. We now have the principal data of the policy register in tabular form divided according to states. These items are again summed and the total sum gives the entire amount of insurance written, premiums, commissions and cancellations for the month. These are now transferred to the journal and from this book to the ledger. Some companies prefer to transfer direct to the ledger from the state records instead of entering the results upon the journal. It is the experience, however, of most of the companies that such a transfer gives rise to many difficulties. There are always exceptions to the general rule and these can be better expressed through the medium of the journal than in any other form. For this reason the journal should be preferred.

A very good rule to remember in insurance accounting is: *All non-cash items should pass through the journal to the ledger, and all cash items should pass through the cash book to the ledger.* If this simple system is used it will save a great deal of confusion and will add to the simplicity of the entire system.

Nearly every company does a considerable amount of reinsurance. Instead of entering the reinsurance premiums ceded to other companies in the policy register, it is much better to have a separate book for this work. This book is called in the accounting system the reinsurance register. The reinsurance register contains the principal items found in the policy register, but in addition contains the amount that the company cedes to the reinsurance company. This is usually a fractional part of the risk. Reinsurance companies pay to the original company a commission for the premiums ceded. This is usually calculated at a flat rate of from twenty to thirty per cent of the gross premiums. Therefore there is ordinarily no provision in the reinsurance register for a reinsurance commission item. If a policy is cancelled the reinsurance return commission is calculated at the flat rate and an allowance is made in the monthly account of the reinsurance company. Some companies have contracts with reinsurance companies to which we have previously referred. These are called treaty contracts. If treaty contracts are in force then the company uses a bordereau which is practically a transcript of the policy register. One copy of this is mailed to the reinsurance company and a carbon copy of this is kept in the office for future reference. The results of the reinsurance register should be carried every month to the journal and from there transferred to the ledger.

Every agent is supposed to send in to the company at the close of each month a statement of his business. This is known as an account current, or agents' account. A copy of one of

these accounts was obtained from the leading company is found in one of the appendices. Each agent's account is placed in an agent's register. The register is divided into two parts—a debit and a credit side. The agent is charged with the premiums on the policies written and the return commission on policies cancelled; and he is credited with the cash remitted the company, commission on the premiums, the postage and any other expense item which the company may allow him. These amounts are summed for the various agencies and transferred to an agents' ledger where the balance between the debit and credit side for each agent is obtained. The final result will show the amount of agents' debit balances still due the company. Sometimes the agents settle small losses and charge the amount paid in their monthly account. These are known as agents' credit losses which will be found in the loss register the same as other losses.

The loss register is one of the most important books of the entire system. If it were not for the losses to be paid insurance companies would cease to exist. It is the most important item of expenditure of any insurance company. Hence the records for losses should always be full, complete and clear. In some of our best companies these records consist of a loss register, an unpaid loss register and the loss files. The loss register usually gives the claim number, the policy number, the name of the insured, the date of the fire, the amount of the policy, the amount of the loss, the date of adjustment of the loss, the date of payment of the loss, the amount paid, and finally, remarks on the causes of the fire. These should all be made out complete in order that the data in regard to losses may be clear and explicit. Some companies keep a loss paid register which gives the paid losses of the current month. These are not arranged according to consecutive claim numbers, but according to the date of the payment of the loss. The results of this



book are carried to the cash book and finally to the ledger. If the company keeps an unpaid loss register, then the unpaid losses at the close of each month are dropped from the list. Losses at the close of each month are placed in this register and those which are unpaid at the end of the previous month which have been paid during the current month are dropped from the list. The unpaid loss register usually shows the losses that have been adjusted, in process of adjustment, being contested, and in suit. This list is very helpful in case that an audit is made of the losses, for if the files are depended upon to determine the unpaid losses they are apt to be placed in the files during the current month so that it is impossible to determine the unpaid losses at a prior date. The loss files usually contain the notice of loss from the insured, the proof of loss, all correspondence relating to the adjustment and payment of the loss, the loss draft or check, and all original papers connected with a settlement of the loss. No correspondence, either from the company or from the insured, should be left out of the files. The files should be numbered consecutively and the outside of the file should contain a transcript of the loss register. To-day the various insurance departments are spending a considerable amount of time with the losses and the work of the examiners should be facilitated as much as possible.

The cash book should be columned so as to show the principal items of income and disbursements. In some of the larger offices it is better not to combine the receipts with the disbursements in one book, but to keep each record separately. At the close of each month the cash book is balanced and this item carried to the ledger. The individual entries transferred from the cash book to the ledger should be clearly indicated. Every item of disbursement should show a listed check or draft. These should be carefully filed according to the number of the check or draft and also according to the entries made

in the cash book. A complete reconciliation of the cash account with the bank balance should be made each month and properly entered in the cash book. At the close of the month a cash statement should be made to the officials of the company of the amount and source of the cash received during the month and the amount and distribution of the cash expended, together with the balance of cash on hand.

The mortgage loan register usually contains the amount of the unpaid principal, the date of the mortgage, the mortgagor, its term, the date of expiration, the date the mortgage was recorded, the document number, a description of the property, a valuation of the property which should include a valuation of the land and the buildings separately, the amount of insurance carried on the buildings, the names of the insurance companies and the date of expiration of the policies. The items in regard to interest should be either entered in this register or transferred to an interest register.

All payments on the principal or of interest should be clearly indicated. These are summed each month and carried to the cash book in the proper column.

The bond register should give a clear and explicit description of the bonds, their par value, book value, rate to obtain market value, market value, increase or decrease due to the adjustment in book value. Nearly the same items should be used for stocks owned by the company.

The unearned premium register is one of the main books of the system. There are many different methods of keeping track of the unearned premium. One of the most difficult things in connection with the determination of this item is the amount of insurance and premiums in force. This demands an expiration register in which the amount of insurance and the premiums may be entered at the close of each month, and the cancellations and reinsurance, ceded during the month, are de-

ducted. If this is arranged for one year policies, three year policies, and five year policies there will be twelve pages of the register devoted to one year policies, thirty-six pages for three year policies, and sixty pages for five year policies. The amount of insurance and the premiums in force at the end of any month may be determined by summing the amount found under each month.

An invention has lately revolutionized the method of calculating the unearned premium. This can now be done by machinery. In most of the larger companies this method is employed. Any system which will allow the examiners of an insurance department to determine the unearned premium at the close of each month in the year will meet the requirements of an efficient system. Nothing else could be accepted. Some companies are unable to determine their unearned premium during the entire year; they do not close up their different records so that this can be obtained except at the time the annual statement is prepared. The company should always be in a position to furnish this important item at any time during the year.

The stock certificate books are so well known to most business men that a description of them seems to be unnecessary. This is also true of the dividend books.

At the close of each year a complete summary of the records of the company should be drawn off on sheets and placed in juxtaposition to the same items of the previous year in order that comparisons may be made of the progress of the company. Percentages of different items to net premiums should be made. A loss statement should be drawn from the sheets and considerable care should be taken to determine those items in which the company is not making a profit.

In addition to the foregoing the minutes of the board of directors, the finance committee and executive committee should

be carefully kept and their vote on any question should be given in full.

The correspondence files and the voucher files should be so arranged that they will be accessible to anyone making an examination of the company. The correspondence of the company is especially valuable as it shows the history of the business integrity, and sagacity of the company. These files are not sacred but should be open to inspection. The company should be proud to show the inner workings of its office, for there are no secrets which should be allowed in a corporation which comes in contact with as many people as the fire insurance business.

### *The Annual Statement*

The underlying principle that is back of the convention blank may be stated as follows:

If the amount of profit or loss during the current year be added to or subtracted from the assets at the beginning of the year, the remainder will be equivalent to the assets at the close of the year.

The amount of profit or loss during the year may be obtained directly by subtracting the disbursements from the income or the income from the disbursements, whichever is the greater.

This may be represented more plainly to the eye by an algebraic formula. Suppose that

$A'$  represented the assets at the beginning of the year

$A$  represented the assets at the close of the year

$I$  represented the income during the year

And  $D$  represented the disbursements during the year

Then  $A' + (I - D) = A$ , or  $A' - (D - I) = A$

These equations may be simplified by removing the parenthesis, and we shall then have

$$A' + I - D = A, \text{ or } A' - D + I = A$$

The second equation equals

$$A + I - D = A.$$

The latter equation is the same as the first. Therefore, the rule:— *To the assets of the previous year add the income and subtract the disbursements and the remainder is equal to the assets at the close of the year.*

By transposition our equation presents two more aspects which more clearly show the relation between the assets at the beginning and close of the year and the income and disbursements. That is

$$A' + I = A + D, \text{ and } A - A' = I - D$$

The various items of ledger assets have tangible values which should be determined by inventory and compared with the ledger items. Charged against these assets are the liabilities. The more important ones are non-ledger items, and their values have to be obtained through computation or estimates which are equivalent to inventories. The statutes regulate the character of the securities in which fire insurance companies may invest their assets. Any deviation from these statutory rules causes a charge to be made against the assets. These are usually entered as a liability, although they may be treated as a deduction from the assets under the heading of "Assets not Admitted."

Accrued interest and rents and adjustments between book and market values which increase the assets are treated as non-ledger assets. These are pure inventory items and should not be entered in the ledger. Adjustments between book and market values which decrease the assets are also deducted under assets not admitted.

Admitted assets are statutory assets after all deductions have been made for assets not allowed according to law. The financial standing of an insurance company is obtained by making a comparison between the admitted assets and the liabilities.

The difference between these two elements is called the surplus. It is not a ledger item and it is determined from the results of the statement. It should not be confused with the ledger surplus which is obtained by subtracting the ledger liabilities from the assets. The non-ledger surplus is a very important item as it represents the amount of assets which a company possesses over and above all liabilities. The ledger surplus represents the difference between the ledger assets, the par value of the capital stock and the ledger liability item. It is a balancing item and subserves no other use in the statement. The capital stock, paid up in cash, is a ledger liability item, used to offset the investments of the company for the conversion of cash into securities. The capital stock and the surplus are united to form the policyholders' surplus. This is a very important item as it represents the amount of assets which a company has at its command available for contingencies.

It is possible to use the ledger assets of the previous year in the trial balance of the ledger instead of the capital stock and the ledger surplus. If this be done then the ledger assets of previous year should be entered on the credit side of the trial balance, and it should remain constant until it is time to make up the next annual statement. This furnishes an infallible test of the work, builds the current year's business upon the assets of the last annual statement, and avoids the use of the meaningless term of "ledger surplus"; besides it gives you an important item of the statement which if not carried in the trial balance must be looked up from the ledger or from the last annual statement.

At the close of each year before the annual statement is made up the items of income and disbursements should be closed in the ledger and the balance of each account should be transferred to a general Profit and Loss Account. The net balance of each account should not be carried forward into the

next year's business. The assets and liability items should be closed, and the net balance of each account should be carried forward into the next year's business. The difference in the treatment of the net balance of each account in the income and disbursements from the net amount remaining in the asset and liability accounts is due to the fact that all the income and disbursement accounts have been merged into the ledger assets and the ledger liabilities at the close of the year. This brings us to another very helpful rule in statement work,—*Any increase in assets must be represented in the income and any decrease in assets must be represented in the disbursements.* This rule is used to balance the income and disbursements with the ledger assets. It sometimes happens that there is a ledger liability which is included in the assets, but not in the income, and consequently the balance shown in the statement will not equal the ledger assets although all the items of the trial balance have been used. If this happens, the only way to get a balance is to carry the liability item into the income, or subtract the ledger liability from the assets. This latter method sometimes is not desirable, as the convention blank does not make any provision for such a deduction.

### *Schedules*

In the back part of the annual statement blank there are a number of important schedules which are used to verify the ledger asset items and the income accumulations derived from them. These are simple inventory sheets which are made up from the various books dealing with the assets of the company. Their principal use is to give publicity to the nature of the assets which the company possesses and also makes it possible for a verification of the items without the knowledge of the company.

They are put up in such form that the insurance department can determine whether the assets are inflated beyond their normal value, whether all the assets come within the statutory rule, and whether the management is efficient in making investments. They are an important adjunct to the statement, and their use has been fully justified by the high grade of securities which the companies now own. The schedules are known as the real estate, mortgage loan, collateral loan, bonds and stocks, bank and unlisted assets.

Schedule A. Real Estate:—The information required to make up this schedule should be found in the real estate register. It is also possible to verify the real estate transfers made during the year by consulting the journal and the ledger. However, as this entire schedule is used for the purpose of testing the final balance shown in the ledger it is best to make up the schedule independent of either the journal or the ledger. Part I of this schedule shows all real estate owned by the company at the close of the year; Part II, all real estate acquired during the year; and Part III, all real estate sold.

Nearly all the real estate, owned by the company outside of its home office property, is acquired through foreclosure of mortgages. As these parcels of real estate are apt to be mortgaged for very nearly their market value, they are oftentimes slow of disposal. The company may keep these for considerable length of time, and, if the period is longer than five years, permission must be obtained from the insurance department to retain the property for a longer time. Real estate is not a liquid asset and the holdings of the company should be small outside of its home office property.

Fire insurance companies at the close of 1914 owned about \$27,000,000 of real estate.

Schedule B. Mortgage Loans:—This is one of the most important schedules of the list, and it should be a transcript of



the mortgage loan register. This inventory sheet is so arranged that the unpaid principal of the preceding year is shown according to individual mortgages. The mortgage loans purchased and the mortgage loans sold are also given individually. It is possible, therefore, to determine the amount of mortgage loans which are unpaid at the close of the year from this data, which should equal the amount shown in the column marked "unpaid at the close of the current year." By means of the entries shown on the face of the mortgage, a description of the property, and the name of the mortgagor, it is possible to verify the ownership of the loans through a search of the records of the register of deeds or through correspondence with the mortgagor. This latter method is a very important method of determining the ownership of mortgage loans.

Mortgage loans are becoming more popular as other forms of investments are tried. They have been found to be very salable in time of financial panics. In fact, trust companies, banks and other depositories will take such security when they will reject almost every other form. If the investment laws of the various states have been followed literally the security is always ample, and they will, therefore, fluctuate very little in value.

At the close of 1914 the various fire insurance companies transacting business in the United States owned approximately \$54,000,000 of this form of security.

Below the schedule in the annual statement blank, the mortgage loans will be found to be classified according to states. This record is of importance in determining whether each state is obtaining its fair share of loans, and also whether the loans are distributed in desirable states. Some companies, in order to obtain a high rate of interest, have invested their money in states that are far removed from markets and commercial centers and where the price of the land is very low.

Schedule C. Collateral Loans:—This schedule is divided into three parts: Part I, showing all loans in force at the close of the year; Part II, all collateral loans made during the year; and Part III, all collateral loans discharged during the year. This schedule should be, like the two preceding, a transcript of the collateral loan register. These inventory sheets are so arranged that the character of the collateral may be determined as well as the substitutes without the knowledge of the company. That such loans have actually been made may be determined through correspondence with the actual owners of the collateral. Fire insurance companies had loans aggregating \$2,500,000.00 on this form of security.

Schedule D. Bonds and Stocks:—This schedule is divided into four parts: Part I showing all bonds owned by the company at the close of the year; Part II, all stocks owned by the company at the close of the year; Part III, all bonds and stocks acquired during the current year; and Part IV, all bonds and stocks sold, redeemed, or otherwise disposed of during the year. The information required for this inventory sheet should be found in the bond and stock register with the exception of the market value. This is determined only at the close of the year, or whenever a statement of the financial condition of the company is desired. There is, therefore, a column showing the rate to obtain the market value and also the market value. Part I and Part II of the schedule are very similar except that the dividends on stocks for the preceding three years from the date of making the statement is given. These four schedules give the book value, par value, and market value, together with the name of the vendor, for all stocks and bonds acquired; and the name of the purchaser to whom all stocks and bonds have been sold. This data gives us a clue for obtaining a verification of the prices at which the bonds are purchased and sold, independent of the usual receipts of the

bill of sale from the brokers and the entries in the journal and ledger. The amount of bonds and stocks owned by fire insurance companies at the close of 1914 was approximately \$500,000,000.00.

**Schedule N. Bank Balances:**—This schedule gives the balance in the checking account at the close of each month, including December 31. It also shows the amount of interest received on bank deposits during the year. Sometimes this schedule is also used for the purpose of listing certificates of deposit which the company holds on different banks or trust companies. The information for this schedule can be found from the cash book or in the check register. The amount of cash assets owned by the companies at the close of 1914 was nearly \$52,000,000.00.

**Schedule X. Unlisted Assets:**—This schedule shows all assets that are owned by the company which are not included in the ledger assets of the statement. These usually consist of bonds and stocks which have become worthless, or which are considered too small in amount to be listed. Small parcels of real estate and sometimes bank balances on banks which have failed are also included in this schedule. These items never form a very important part of the assets of a company.

### *How to Make a Financial Statement*

There are many ways in which to proceed to make a financial statement. The usual method is to begin with a verification of the ledger assets at the close of the preceding year.

This may be found in the annual statement for that year, but this data is very unreliable; unless the examiner checks the ledger balances which make up the number. If the ledger assets are carried on the credit side of the trial balance of the ledger, the mere fact that the ledger balances form a complete balance is quite evident that this item is correct. After the de-

termination of the correct amount of the ledger assets at the close of the preceding year, then draw off the remainder of the statement covering all the items to be found in the trial balance. This should include the income, the disbursements, and the ledger assets of the current year. After this work has been completed take the inventory sheets or schedules which have been previously described and make them up for each of the ledger assets. The results of each inventory sheet should be compared with the items found in the trial balance and in the statement. The inventory sheets will show the amount of accrued interest on mortgage loans and bonds, and the bank schedule should show the accrued interest on certificates of deposits; in addition to this we can determine the difference between the market value and the book value of the assets. If the market value is greater than the book value this should be included with the items of accrued interest under the division of the statement called "Non-ledger Assets." Sometimes the furniture and fixtures are also included under this heading. All assets that will not comply with the investment laws of the state in which the home office of the company is located should be deducted from the gross assets under the heading of Assets not Admitted. This will include such items as premiums in course of collection which were written ninety days prior to the date of the examination, bills receivable, and furniture and fixtures, if these items have been included in the ledger assets. In addition to the depreciation in real estate, mortgage loans which are second liens, and all mortgage and collateral loans, which have been found to have insufficient security and funds in banks that have failed, should also be deducted under this heading. The entire amount of deduction taken from the gross assets will leave the amount of statutory assets, which, for convenience, have been called "Admitted Assets."

From the unpaid loss register, or from the unpaid loss files, determine the amount of unpaid losses as of the date of the examination. If the date of the examination is prior to the time when the examination is made, then it will be possible to determine the amount of unpaid losses which have occurred at that time which was not reported nor been entered upon the books of the company. Determine all losses which are adjusted and unpaid; all losses which are adjusted but with drafts outstanding; all losses that are being contested; and the amount of reinsurance carried on the unpaid losses, which should be deducted from the gross amount of unpaid losses. This will give the net amount of unpaid losses. From the unearned premium register, determine the unearned premium on all term policies. To this should be added any other ledger liabilities or any non-ledger liabilities such as unpaid bills, estimated amount of accrued taxes, conflagration reserve and any special reserves that may be set aside for a definite purpose. The sum of these should equal the amount of liabilities other than capital stock and surplus. Add to this sum the amount of capital stock paid up in cash, and deduct the result from the admitted assets, and the result will be the non-ledger surplus. From these items determine the liabilities which should be equal to the admitted assets.

A test of the ledger items may be made by determining if the balance after adding the income and deducting the disbursements according to the formula will equal the ledger assets.

In drawing up the statement from the trial balance the following rule will be found to be of considerable value:

*Rule:*—All credit items of the trial balance are income or liability items and all debit items of the trial balance are disbursement or asset items.

## CHAPTER XI

EXAMINATION OF A FIRE INSURANCE  
COMPANY

An insurance company is a creation of the state. It is granted a charter because the incorporators have met certain conditions set forth in the law. After it has completed its organization and been examined by the department of insurance to determine if it has the statutory amount of capital and surplus, and its funds are held in cash or invested as required by law; that its incorporators are men of business integrity and financial standing, and they understand the obligations imposed upon them by law; and that the company has complied with all the requirements of law, it is granted permission to transact business for the period of one year. If it is solvent at the close of the year and its business methods are good, its license is renewed for another year. This procedure is kept up year after year.

In renewing its license the state indirectly puts its stamp of approval upon its business methods and its ability to carry out its contracts. The right, therefore, of the state to take any ordinary means at its command to determine the correctness of its position is without doubt a reasonable and just one to assume. One of the expedients which the state uses toward this end is to make periodical examinations of the affairs of the company. Its right to do so is beyond question, and it would not be fulfill-

ing its duty to the citizens of the state without taking this necessary step to safeguard their interest.

Formerly the solvency of the company was the main thing which the examination sought to disclose, but more lately the general business policy of the company has been a very important subject for investigation. It has been claimed by some that the examination of insurance companies are made too frequently and that their cost is excessive. Frequency of examinations is necessary as the fluctuation of assets among the companies in the fire insurance business, at least, are so great within the period of even a single year that the past financial standing of a company is no criterion for its solvency in the future. Formerly the expense of an examination was much greater than at present. A few years ago it was not unusual for examiners to be paid a high daily wage in addition to their hotel and other necessary expenses. To-day nearly all the insurance departments pay their examiners a regular salary out of the general funds in the state treasury, and the insurance companies are required to bear only the nominal sum of the railway, hotel and other expenses of the examiner. Under these conditions it costs less to have an examination made of the affairs of an insurance company by a state department than to hire paid auditors from some one of our more important accounting firms. The examination however should supplement the latter as a thorough checking up by public accountants means an additional safeguard on their business methods.

Another objection which is sometimes urged against an examination is the fact that it interferes with the regular routine work of the companies. There can be no doubt but what this is true. The examiners must have access to the records and files of the company and they must also seek information from the clerks and officers, and this no doubt occasions some interference with the regular order of work. We believe, however,

that too much stress has been laid upon this objection, as it is possible to allow the company to make the necessary entries in their books, while the examiners are investigating other parts of the work. The publicity which comes from an examination, together with the information which it discloses to the officials and the board of directors are of such vital importance that trifling matters should not stand in the way of making frequent examinations. It has been found that those companies which fear an examination, and object to it, are the ones that are most in need of it. A well organized, well equipped, solvent company will welcome an examination as a means of proving to the public the efficiency of its management.

### *Qualifications of the Examiner*

As the examiner represents the state his work is of considerable importance. The head of the insurance department largely bases his opinion of the condition of a company upon the report of his examiners. In most cases he is unable to take personal charge of the work. The multiplicity of duties which he has to perform in the insurance department precludes the possibility of his assuming this additional burden. The work therefore that the examiner is called upon to perform is of such a nature and of so much importance that only men who have the proper qualifications and educational training should be placed in charge of the work. His ideals must be high, and his knowledge of the business broad, thorough and comprehensive. He should be able to discriminate between the important and the trivial. He should be able to recognize the blunder from the deep, well laid, purposeable scheme to defraud; he should not be overbearing, blustering or uncourteous; he should be firm when firmness is demanded; he should have the ability to get information where others fail; he should have the business sagacity to know when the company has made a good or poor in-



vestment; he should be able to place himself in the position of the one who is making the entries in the books, and from that viewpoint determine whether such entries are correct or not; he should have initiative to make new and untried methods of verification; above all he should have intuition. This latter qualification will enable him to almost feel that something is wrong before the actual facts are established. He should be broad enough to acknowledge his mistakes, for infallibility cannot be found; he should be diplomatic and have the ability to leave the officers of the company with the impression that he is working for their best interest, the interest of the company and the good of the state; he should be truthful and frankly admit that a report is going to be adverse to them. A high sense of honor is essential and personal aggrandizement should never be considered. The duty of an examiner is plain. He is sent on a delicate mission and it will require no little amount of business sagacity and diplomacy in order to gain the object for which he is sent. He must not be too suspicious. Frequently entries are made and records filed which are out of harmony with the other entries, but which can be easily explained if information be asked. He should be a man of unimpeachable character, and one whom no financial inducement will swerve from his path of duty, even though this be not a direct offer of cash, but personal helpfulness in other lines. He should not be too timid to hold a conversation with the officials of the company about any matter pertaining to his duties. Some examiners will not have an interview with any official of the company, which he is sent to examine, without a third person being present. If the examiner is of the right timber he will be able to meet the people whom he is to investigate on a business or social level.

The examiner of an insurance department should not be appointed to his position because of political preferment, but by a civil service examination. He should be paid a salary com-

mensurate with the importance of his work, and his tenure of office should be reasonably permanent. As his examinations will be conducted at the home offices of the companies, which are nearly always located in large cities, his expenses will necessarily be larger than the average employe working for the state. As his work is very strenuous and his responsibilities considerable, his hours of labor should be short and his periods of relaxation frequent. In order for an examiner to do his best work he must enjoy good health, have a clear mind and a sanguine temperament.

The old saying that "men are born to a profession and not trained" is more true of examiners than that of any other.

### *Criminality*

Direct criminality by the officials or clerks of an insurance company is very rare. Nearly all the heads of our large fire insurance companies have won their position through merit and with very few exceptions they are men of honor and integrity. While this is true still there have been exceptions, and it is the duty of the examiner to find the exception to the general rule. Under the present method of making itemized schedules of assets, which can be verified without the knowledge of the company, there is very little misappropriation of the assets unless it be through forgery, concealment of receipts, or forms of graft. More often the assets of a company are depleted through mismanagement than through actual criminality. The opportunities, however, for doing evil are numerous and it is the work of the examiner to locate these during the course of his investigations.

One of the most common documents to be forged is the real estate mortgage and its accompanying note. Forgery can always be discovered through the medium of a microscope or a magnifying glass. A person who forges a document looks at

the original letters in the word, endeavors to make part of them, looks at the original again, makes another part, and so on until each letter is formed. The halts are always indicated by dots and dashes which are always sure tracks of the forger. This can be brought out quite plainly with a common magnifying glass. In the examination of mortgage loans it is well to test this element of the work. It is a peculiar trait of the human intellect and it will work along lines of least resistance, similar to physical forces. The criminal who has succeeded in purloining money from the company and escaping the consequences of his crime is very apt to repeat the same act in the very same way within a reasonable period of time. If it be a false entry in a book, that entry is quite sure to appear again. If it consists of making a double entry of the same item that form of entry will be quite apt to be repeated. If it consists in the alteration of words and figures such entries will be scattered through the records. Some years ago a certain official of a mutual benefit society adjusted losses in such a way that the company paid more than the beneficiary received. This was repeated until finally he was discovered, and he served a sentence in Auburn State Prison. Another instance occurred in which a fire insurance official, working in connection with the cashier of the company, made up false proofs of loss and drew the money on them. The forgery was discovered and the man was relieved of his position in the company. An official of a fire insurance company changed his long term business to that of short term in order that he might reduce his unearned premium liability. This was discovered; the company was found to be insolvent; reinsured, and afterward passed out of business. In one company the premiums in the daily reports were reduced for the same purpose and two prominent citizens barely escaped a prison sentence. In the examination of an insur-

ance company, the examiner must always be on the lookout for such occurrences.

### *Espionage Associations*

Closely related to the work of the examiner, but forming no part of it, are the different forms of espionage associations. These may be classified as detective agencies, detective bureaus, inquiry departments, commercial and credit agencies, and the public and private secret service bureaus. Commercial and credit bureaus, or agencies, are used primarily to determine the financial standing and integrity of individuals, firms, and corporations. They have their correspondents in nearly every community and they are practically indispensable to all business people who transact an inter-state business. Nearly all insurance companies are either members of these agencies or are purchasers of the right to a certain number of reports. In using these associations, reports should be obtained from more than one correspondent. It frequently happens that one correspondent will give a favorable report, while another, an adverse one. As these people, who write the reports, are drawn from the legal fraternity, or from local bankers, they are apt to weave their prejudices into the report. The better class of agencies are careful to send the reports from several correspondents. Before commencing an examination, the examiner may sometimes use these reports to great advantage.

Secret service bureaus are of two kinds—public and private. Public bureaus are usually connected with the various branches of the state and federal government. They may consist of little else than the regular employes of a department, or the game and fire wardens, inspectors of different departments, and kindred occupations. On the other hand but few departments have not one or more detectives on their lists, and the United States government has a trained force. Private secret service

bureaus are nothing more nor less than detective agencies of a very undesirable type.

Inquiry departments are usually maintained by large life insurance companies for inspection of risks, and applicants for insurance. Their work consists of inquiries into the habits, health, and moral and financial standing of prospective candidates for insurance. In this connection they serve a useful purpose, but, when their work consist in inspecting the records of policyholders for the purpose of causing them to lapse, the officials of the company deserve the severest form of arraignment by the examiner and the department of insurance. Some of the larger fire insurance companies maintain departments which are the equivalent of inquiry departments.

Detective agencies and detective bureaus have increased with wonderful rapidity during the last ten years. Some of these agencies devote their energies to apprehending criminals and will not accept any other kind of work. These constitute the better class of these agencies, and, frequently, they confer a great benefit on society at large through their work. Usually they are closely connected with the police department of our city governments and work in harmony with them. They are closely supervised and their workers are usually dependable. In some of our larger cities this is not always the case. The plain clothes men of foreign decent are often more to be feared than the criminal. If they are used at all their operations should be confined to their own nationality. Not a little of the graft in our larger cities can be traced to this class of detectives. In the class of plain clothes workers, belong the plain clothes women, which have been a recent acquisition to our police forces. Their work consists in giving direction and advice to strangers in the city, protecting their own sex from unwarranted intrusions, and helping their unfortunate sisters. In this work they are carrying on a noble form of

charity; but, when from mere vanity, they take advantage of their prerogatives, and lure men to make advances to them, they deserve the condemnation of all self respecting people.

Private detective agencies, which investigate the conduct of employes and individuals, which furnish evidence to lawyers and attorneys, and seek information in regard to divorce cases are all bad, and some are positively vicious. Their workers, trailers, shadows, and seducers consist of the flotsam and jetsam of society. Their main function is to place their subject in a compromising situation so that they can furnish the information desired. Their reports are very unreliable, and are purposely colored in order to give satisfaction to the person who hires their services. In most cases they will sacrifice the reputation of a person for a mere pittance. They have extensive connections with similar institutions in all the large cities. Indirectly, through house officers of hotels, waiters, bellboys, chambermaids, telephone operators in both local and central exchanges, messenger service of telegraph offices, porters and brakemen on railways, newsboys in cities and on trains, and shop girls in stores, they have a complete circle of accomplices on whom to call for aid in carrying out their plans.

This class of agencies frequently come directly in contact with the examiners' duties owing to the fact that they are very largely employed by officials of insurance companies, and those who desire to keep track of his doings. If he is getting too persistent with his work he must be made more amenable to suggestions. If his report is to be adverse to the company, his influence must be destroyed without his ever being aware of the source from whence it comes. When the examiner discusses his plans and subordinates tell of their findings around the dinner table, seated close enough to hear, will be found the detective seemingly engrossed in conversation with a lady while a third picks up the conversation of the examiners. Chamber-

maids cautiously open his grip and house officers read his notes. Newsboys, apparently crying out the news, follow his every step. If he steps on a car the leader of a group of three gets on at the next crossing. No lightning changes; no impenetrable disguises as he has been led to believe. Instead, constant change of "trailers" and "shadows." To be suspected means ruin to their plans and the success of the whole operation is to keep in the dark. If he buys a ticket for a neighboring town, the man behind, who inquires the fare to a distant place but buys no ticket, is undoubtedly a detective. Go to the theater and the lady who comes late but sits next you, and resorts to many devices in order to enter into conversation with you is very apt to be a detective. These agencies come in contact with the examiner in many ways, and always in opposition to his best interest.

The investigation of these agencies is very difficult and the only way in which it can be done successfully, is to take the part of a ready tool, and, when you have gained your point, quietly get out without raising suspicion. The dangers in this method are twofold: the examiner must take the chance of being placed in a compromising position and being misunderstood by the department and the examiners under him, and, strange as it may seem, the reports of the detective agency will be given greater credence than his own. Owing to these facts the examiner will do well, if he avoids them entirely, and exercises extreme care not to be placed in any position that will admit of these forces taking advantage of him to his detriment.

These agencies are powerful weapons to place in the hands of the unscrupulous and unworthy. The person who resorts to them does so for the purpose of destroying an adversary or getting rid of a competitor. The person who employs these agencies is a co-conspirator with them in their operations, and he should be shunned by all men who believe in honor

and fair play. Some politicians use these agencies to a large extent and it is not too much to say that modern government is powerfully influenced by them. Under the guise of testing employes, acts have been committed that border on the criminal.

Private detective agencies are too great an evil to be left alone and be allowed to expand as they are doing at present. They should be brought under the control of the government and properly licensed,—selecting and casting out the unworthy. Only people of approved calibre should be allowed to employ them, and the subject matter to be investigated should be open to the scrutiny of government officials. The use of these agencies by insurance officials and government employes should be very much restricted.

The writer early recognizing the importance of different forms of espionage upon his work has made an intermittent investigation of their methods during the last eight years. With the writing of this topic he completes his work. He will feel amply repaid if he has written anything on this subject which will be of benefit to other examiners and thereby avoid the results of ignorance on one of the most delicate subjects connected with his work.

### *How to Test the Books of a Company*

As we have said, the records of a fire insurance company are very voluminous. Examinations are not held more frequently than once in two years. It is practically impossible for the examiner with his small force to make a complete check or audit of all the items from the date of the last examination. How then is it possible to test the records of a company so that there will be a reasonable certainty that they are correct? As we have previously stated, if at any date, we take the ledger assets at that time, and to this sum add the income for any given



period of time, and from this amount subtract the disbursements, it will equal the ledger assets at the close of the period. This gives us a method for the solution of the problem. Suppose that in the interval of two years we block off a period of three months and apply the preceding test. In order to make the test effective there must be a complete check of every item made in that interval of time. If nothing be found out of the ordinary course of the business, we should then block off another period of time and take a second test. If again the results are the same, we may feel reasonably sure that there is nothing wrong with the records of the company. If, on the other hand, something should be discovered which is out of the ordinary routine of clerical errors, we should follow this up tenaciously. It is possible that this may lead to important results, for the criminally inclined is quite sure to repeat his acts within a reasonable period of time. When once on the track of something wrong it will usually be found that the amount of the defalcation will increase. Therefore, block off a third period and possibly a fourth until all the facts in the case are established. It has been said by some examiners that it is not the purpose of an examination to make an audit. This is undoubtedly true, but the only way to discover errors and defalcations is to make a thorough, positive check covering a definite period of time. By this simple means it is possible to test the records of the largest companies without making a complete audit.

### *Order of Work in an Examination*

The head of an insurance department should always notify his examiners several days in advance of the time of making an examination. This will give the chief examiner an opportunity to assign to each subordinate a division of the work relating to the department. A careful search of all the records of

the department should be made for information relating to the company. The articles of association, the various amendments thereto, the annual statements of the company, the examinations made by previous examiners, and the correspondence relating to the management and financial condition of the company should all be carefully looked up and notations and notes made in regard to all the facts which would have a bearing on the work of the examination.

After the examiners have reached the home office of the company their first duty is to become acquainted with the officials and the heads of the different departments. Much of the success of the work will depend upon this first appearance. The officials may make it very unpleasant for the examiner in the prosecution of his work if they are opposed to him. He should have their confidence in order to get the information which he will need from them. He should be careful, however, not to abuse this in any form nor give the officials the idea that he is endeavoring to ferret out things which would be injurious to them. He should prosecute his work in an open and frank way and by so doing gain the respect of all with whom he comes in contact.

The next thing which the examiner should be careful to obtain is suitable quarters for his force. Oftentimes this is overlooked and the examiners are required to work with the clerks in the main office, or relegated to some office which is too small and illy ventilated for general office work. Every company should make ample provisions for the examining force and it is not too much to ask to be assigned to a room with tables and other apparatus and stationery, which will meet their requirements. Usually the directors' room is not occupied. If it is not, this should be assigned to the examining force. When the examiners are ready to prosecute their work, it is necessary to obtain a list of the records and their location. Have the secre-

tary make out a complete list of the records and their uses. With this in hand, locate all files, records and various clerks that have charge of the departmental work. This is a very important part of the examination as it saves time in obtaining information which might be otherwise difficult to obtain.

Some examiners believe that it is best to commence the real work of the examination with the counting of the cash in the drawer. As a matter of fact, it makes but very little difference which division of the work you commence first. The main purpose is to test the books and records. The cash in the drawer may be proved from the original records and there is but little object in obtaining the amount at the beginning of the examination.

We have found that a very good method is to test the daily reports with the policy register if any, and the accounts of the agents. In doing this, if the period of time is limited to three months as previously suggested, then a complete check of all the daily reports will have to be made. If the work consists of testing the records of the company for a period of one year then it is best to take certain large agencies, such as Chicago, San Francisco, Seattle, New York City, and Detroit and check the reports from these agencies into the policy register. The result of the policy register should be traced to the state records, from the state records to the journal, and finally from the journal to the ledger. The work on the cancellation register may now be taken up. Cancelled policies should be checked with the entries in the cancellation register. The original premiums on the cancelled policies should be compared with the premiums shown in the policy register. This will verify the entry of the premium item in the policy register. Cancellations should then be traced through the various books until finally entered in the ledger. The daily reports having the reinsurance riders attached to them should be compared with the entries in the

reinsurance register. The reports of the reinsurance company should be compared with the financial results of the register and also with the entries in the cash book and the journal. If the company has a treaty contract with the reinsurance company the original contract should be studied with considerable care. See if the reinsurance company is obliged to deposit a certain sum with the company as a protection against the conflagration hazard. Notice if this has been included in the assets and if the statements of the company carry this as a liability. Determine the rate of interest that the reinsurance company gets on their deposits and see if this item be placed on the proper side of the interest account. After studying the contracts, check the bordereau with the original daily reports. Trace the results of the bordereau to the register and finally to the journal and ledger. Reinsurance premiums written and commissions should likewise be traced through the original books of entry to the ledger.

The agents' accounts should now be audited and the entries in the agent's register be compared with them. Note if the cash remittances from the agents have been entered in the cash book. If the remittance book is used check the individual items of the remittance book with the accounts from the agents. Trace these results finally to the ledger. At the close of each month find the balance due on each agents' account and trace this balance to the trial balance of the agents' ledger. In making a check of the agents' accounts be careful to compare the rates of commission paid in the larger cities with those in smaller places. Determine if the company uses the graded schedule of commission or whether they pay their agents a flat rate. See if the commissions are out of proportion with the premiums received. Finally, trace the commission, the postage, and any other expenses allowed the agent through the various books of entry to the ledger. Notice if

each item of expense is placed under its proper ledger title. Does the company bunch all its agents' expenses under one sum or are they properly distributed? Determine if the company uses the general agents' system or the branch management system. If the latter, obtain the salary paid the manager, the rental of offices, and the salaries of other employes. See if these items are placed under their proper headings. Study carefully the correspondence of the company with its agency force. Finally obtain from the company the monthly expense sheets of the various state agents. Notice the salaries and expenses of each special agent and determine if these are exorbitant. Also get the expense sheets of the officials and determine if these are out of proportion to the amount of services rendered. Take considerable care in searching the original records, for the proof for each item should be found over the handwriting of some other person than that of a home office employe or an official of the company.

You will find certain items in the agents' accounts which are too small to be taken into consideration, and are charged to other items. This is quite a common practice among the companies as the agents' debit balances of such small accounts hardly pay the cost of collection. Besides, such small items may seriously offend a good agent and lose his services. The agency system of a company is very important, and the manner in which the company deals with its agency force is one of the important things in the examination of a company.

### *Cash Transactions*

The cash transactions of a company should be verified with great care. This applies to the debit as well as the credit side of the cash account. The cash receipts are of two kinds,—those that increase the assets and those that change the form of the assets but do not affect the amount. The former are

true income items. The latter should not be included in the income. The former consist of receipts from agents, interest and rents, refunds of various kinds, receipts from reinsurance companies, contributions to the surplus by officials or stockholders, and profit on the sale or maturity of ledger assets; the latter of payments to the company on loans, redeeming of certificates of deposit and the turning of other assets than cash into money.

What is true of the receipts is equally true of the expenditures, losses, adjusting expenses, return premiums, payments to reinsurance companies, commissions, agents' expenses, inspections, expenditures to rating boards, fire department dues, taxes, dividends, traveling expenses, charging off of various items of assets and various other small items are all true disbursements; but removal of funds from one bank to another, depositing money in a bank, and many other similar transactions are not true disbursements and should not be included in the expenditures of the company.

There is an old, familiar saying which runs as follows: "Every cash transaction should be proved." This is a very good rule for examiners to follow. The means at hand for proving such transactions are considerable, such as bills, checks or acceptances, vouchers, etc. Each one of these should be studied with reference to its signature, the payee, the endorsement and the different banks through which the commercial paper passed. In this work, be careful of bills from unknown firms and persons, especially if money is advanced on them. It would be quite easy to extract a large sum of money from an insurance company through false or forged bills of account. Not long ago the writer had occasion to look up several bills on unknown parties which proved to be firms that had removed from the city and their whereabouts were unknown. As the cash from the drawer had been used

to pay these bills, there was no visible means of proving that the payees did not receive the money named in the bills, and it was only through inquiry that the true facts were established.

Study all irregular checks and drafts. Drafts issued to unknown firms without a commercial rating should be scanned with care. In the case of drafts, examine carefully that of the drawee to the company. All transactions involving cash which relate to the purchase of securities or other forms of assets should be carefully examined. Never be satisfied until the company has furnished abundant proof that there is no graft connected with the purchase. The writer once found that one of the officials of a company, who had received a contract from the board of trustees for the privilege of selling an increase in capital stock, was profiting by a form of petty graft by purchasing securities from only those bonding houses that would purchase stock from him, thereby receiving the commission on the stock sold. Another was farming out the printing bills to printers that would purchase stock in a similar transaction, thereby realizing a small profit on the sale in the form of commission. In this case the company was paying an excessive price for its stationery.

Bonds and stocks which have been purchased a considerable length of time before the date of the examination may have in them elements of graft. The purchase price of these securities should be compared with the purchase price of similar securities at the date when the securities were bought. There have been officials who have purchased bonds in industrial enterprises and in banking concerns and received large emoluments in the form of a salary as director or president of the corporation. The writer found one instance in which the president of an insurance company was also president of a bank, and it afterwards developed that he secured his position in the latter institution through the purchase of stock

with the company's money. In this case the stock was issued in the name of the president, who after being elected assigned it to the insurance company and the stock was re-issued. As president of the company he voted the stock and received a very large salary as a consequence. In another instance a company had a large number of certificates of deposit on a bank, which were made out directly in the name of the treasurer who in turn was bonded for a large sum. When requested to explain why he carried the certificates in his own name instead of that of the company, he was obliged to acknowledge that he was indirectly using these certificates as collateral for another loan. Not long ago a fire insurance company purchased a large amount of United States government bonds and a bank borrowed these bonds and issued their certificates of deposit to the amount of the face of the bonds and deposited the original securities with the Federal government. The company consented to this transaction owing to the fact that the certificates of deposit bore  $4\frac{1}{2}\%$  interest while the bonds only two per cent. All such transactions are irregular and should be examined carefully by the examiner. He should require that the funds of the company be invested in first class securities, or be on deposit in banks or trust companies, or within the vault of the owners.

There is scarcely any form of asset that is so susceptible of being diverted to improper uses as the cash account. Some companies keep their cash account intermixed with a half-journal, so that it is impossible to tell the actual receipts and disbursements from the cash book. The examiner should be especially careful in the analysis of such accounts. They may be made up in such a manner to mislead him for some ulterior object. Never be satisfied with simply determining the balance of cash in office. Nothing short of an actual cash statement showing the sources of revenue and the avenues through



which the money has been spent, together with the amount in drawer should be accepted as a sufficient statement for the cash transactions of a company. Such statements are oftentimes very enlightening and sometimes very surprising. An examiner, not long ago, discovered an error of over \$7,000 by this method and the writer knows of another instance where considerable difficulty was experienced in explaining a transaction involving \$12,500. A simple cash statement such as described above, divorced entirely from non-cash items, is one of the most efficient means of discovering errors and defalcations in the cash account.

### *Real Estate*

The amount of real estate owned by the company, as we have previously stated in another portion of the work, should be limited to the home office property and those parcels which have been acquired through foreclosure of mortgages. As the amount of real estate is considered an admitted asset under the laws of all the states, it is important that its value be determined very closely. The examiner should usually employ an expert appraiser of real estate to do this work. It is better to have the judgment of two, but, if this cannot be secured, then the appraiser should be a man whose knowledge of the valuation of real property should be broad and extensive. In determining the valuation of the home office building, considerable care should be taken to make the valuation low enough so that there would be no question but what the property would sell for more than the appraised valuation. In this connection the home offices of most fire insurance companies are built for a special purpose and they do not make good renting property unless they can be leased for banking purposes or for other kindred uses.

The title to the real estate should be examined carefully. The deed of conveyance from the vendor, and abstract showing

the transfer of the property should be produced by the company. Be careful to see that there are no liens on the property. This may be found through a study of the abstract. The amount of fraud, however, in connection with real estate transactions, is so small that there is but little advantage gained in making an extensive investigation of the legal side of the transfer. A letter to the vendor will establish the fact, if the property has been purchased in good faith and that he has given a deed to the purchaser.

The real estate acquired through foreclosure of mortgages should be examined more carefully, especially as to the title. Determine if the vendor's title rested upon a tax deed or other similar article of conveyance.

All the papers connected with each mortgage foreclosure, including the abstract and satisfactions of prior mortgages, should be found in the files or should be conclusively proved to the examiner by means of the abstract. In this connection it is well to determine if the abstract is from a reliable abstract company, or from the office of the register of deeds. Abstracts from unreliable parties should not be accepted in testing the sufficiency of a title. Titles guaranteed by insurance companies transacting this kind of business are usually good, but the conditions of the policy should be read carefully. Such methods of proving title are very common in our larger cities, and they should be accepted in lieu of the abstract and the attorney's opinion in regard to the sufficiency of the title.

### *Mortgage Loans*

The examination of mortgage loans requires a legal knowledge of real estate transactions. Besides the entries that are made in the mortgage loan register, each mortgage loan should have a separate file in which should be kept all the papers and correspondence relating to the loan. On the outside

of the file, as we have previously stated, there should be a transcript of the information found in the mortgage loan register. The papers that should be found with every mortgage loan are the mortgage note, the mortgage, the abstract of title, an opinion from a legally authorized attorney that the title rests in the person of the mortgagor free and clear from all incumbrances, an appraisal of the property mortgaged by at least one prominent real estate broker or agent, a copy of the resolution of the finance committee accepting the loan, a copy of the tax receipt showing that the taxes have been paid during the preceding year, the assignments of the mortgage if it be purchased from a second party, and all other correspondence relating to the request for the loan by the mortgagor and the granting of the request by the officials of the company or by the finance committee. These papers should be placed in the file in some regular manner, in order that they may be scrutinized quickly. Commence the examination of the file by a careful study of the note or of the bond accompanying the mortgage. If it be a note, determine the date of maturity and if such date has already expired when the examination takes place. In some states an extension is required if the note has passed the date of its maturity. In the state of Wisconsin and many other states, it is better not to have an extension for a past due mortgage, as the extension might involve consideration of other liens unless the consent of the lienors is obtained. Determine if any payments have been made on the principal and if these have been properly endorsed on the note, and also the remaining amount of unpaid principal. Study the interest transactions and determine if the interest has been paid promptly, and if there is any overdue interest. Mortgage loans which have not a sufficient security are apt to have a considerable amount of overdue interest. Finally study the sig-

natures of the note and determine if it is an ordinary promissory note, or a mortgage note, or a joint and several note.

The mortgage secures the payment of the note. In many cases the mortgage does not convey absolute title upon the mortgagee. The title rests upon the payment of the principal of the note. See if the note and the mortgage are dated at the same time. Determine if it is a first lien on the property mortgaged by a study of the abstract, or a perusal of the attorney's opinion in regard to the sufficiency of the mortgagor's title. Note if the attorney has suggested corrections of title and if these have been performed through quit-claim deeds or decisions from courts. Every abstract should show that the mortgagor of the property is the company who owns the mortgage. If this is not plainly indicated on the abstract, it should be brought down to the date of the examination in order to determine its proper status. Study the mortgage somewhat in detail and determine if it has an insurance or tax clause, requiring the mortgagor to insure the building and keep the taxes paid. Lastly, determine if the mortgage has been properly executed and been made a matter of record. A complete verification of the title can only be determined through correspondence with the mortgagor or through the office of the register of deeds. All of these sources of information should be consulted.

Some companies object to taking mortgage loans on account of the large amount of time and expense required in making an examination of the loans or an inventory of the property. A mortgage loan, once examined by any recognized insurance department, should not be re-examined again, unless there is some alteration in its legal status. If the papers have all been properly made out at the time the loan was contracted, they can be examined quite rapidly by an expert at the business. This form of security is so reliable, safe and free from fluctuations that nothing should be done to discourage the of-

ficials of the companies from giving them preference over other forms of securities. They have been found to be a quick asset in times of financial panics, and their safety has been recognized by the greatest financiers of our country.

Mortgage loans are usually divided into two classes,—those covering farm lands and those covering city property. In a rapidly growing community, mortgages on city property have been found to be equal, if not superior, to that on farm lands. Farm mortgages, however, usually pay a higher rate of interest and their security is equal to that of mortgages on city property. City property may be mortgaged to two-thirds of its appraised value, but farm mortgages should not be taken for over one-half the value of the property. The reason for this is due to the fact that it has been found that foreclosure of mortgages is more frequent on farm lands than on city property. This has not been due to lack of security, but rather to lack of ready cash for meeting interest payments. Farmers have, until quite recently, been obliged to wait until the sale of their crops in the fall before they were able to pay their interest. Since diversified farming has been adopted in many states, this condition has been somewhat changed.

In a preceding part of this work it will be found that fire insurance companies have invested only about one-tenth of their assets in mortgage loans. This is an unfortunate condition, as land values in both city and country have been on the increase, and their safety should add to the attractiveness of such loans.

### *Stocks*

A considerable portion of the assets of fire insurance companies consists of stocks in dividend paying corporations. A few years ago this was equally true of life insurance companies, but, now, they are prohibited from holding such forms

of assets by statutes. Undoubtedly the framers of the law deemed that there was too much risk attached to the ownership of stock to consider it a proper asset for a life insurance company with their long time contracts.

As the manipulation of stock is so complex, and its true nature so universally misunderstood, it has been thought best to give a brief account of the character of this form of possession.

Corporate stock is not a tangible thing; neither is it any lien against any definite tangible property. It is simply a *right* to share under certain limitations in the management, the assets, and the earnings of a corporation. As the management of a corporation is usually in the hands of a few large stockholders, who dictate the policy of the corporation, this right is of very little value to the average shareholder. The earnings of a corporation may be very large and its profits abundant, but, unless the directors declare dividends, there seems to be no way in which the stockholder can obtain any of the proceeds. The courts will not interfere with the management in the apportionment of the assets and earnings which are to be distributed among the shareholders. The directors alone have the right to declare dividends. The Midvale Steel Company of Philadelphia devoted all the earnings of the company for ten years, from 1887 to 1897, in improvements and betterments in spite of the violent protests of the minority stockholders and their endeavor to force a dividend. An unscrupulous management might never declare a dividend, while enjoying the fruits of unlimited wealth. The passing of dividends has become a very important feature of modern finance, as the diverting of the surplus to improvements means greater borrowing power.

The true value of stocks depends upon the amount of assets, free from liens and incumbrances, the earning power of each share, and the number of shares of stock issued. Suppose that a corporation had assets of \$1,000,000 which were

clear of debt and earning a fair proportion of profit on its capitalization; if the number of shares was 1,000, the value of each share would be \$1,000; if 10,000, each share would be worth \$100; and, if 100,000, \$10. Conservative corporations issue only a limited number of shares, while some promotion schemes contemplate the issue of stock many times the value of the tangible assets, and depend upon future prospects for the payment of dividends. If you study the quotations of the New York Stock Exchange, you will find the value of stocks ranging from only a mere pittance to nearly \$1,000 per share.

The par value of stock is its nominal or scrip value, and has nothing to do with its true or market value. In fact it would be quite possible to omit from the certificate issued to the shareholder, any reference to par value without affecting its true attributes. This is permissible in New York State and in some other states. It was suggested sometime ago by a leading corporation attorney that such an elimination be made, but the custom has become so fixed upon the American public of stating the nominal value of each share that it would be very difficult to eradicate it. No doubt the same object will be attained as people become more familiar with corporation practice, and the general recognition of the fact that par value and actual value do not correspond, and are not synonymous terms. As we have said before, the real test of the true value of stocks is its earning power per share.

In most corporations, the stock is all of one class and no shareholder has a greater right or privilege than another. Such stock is called "common" in the United States and Canada, and "ordinary" in Great Britain.

The larger and more prominent corporations, however, set aside a class of stocks with special privileges. Such stock is called *preferred* stock. This class of stock is usually given a preference as regards dividends over that of common stock.

Such dividends are known as fixed dividends and may be *cumulative*, that is, if profits are not enough to pay the fixed dividends in full in one or more years, the unpaid portions remain as a claim against the earnings of the company and must be settled before the common stock can share in the profits. On the other hand, it may be *non-cumulative* meaning thereby that, if the profits in any year, including the accumulative profits of preceding years, are insufficient to pay the fixed dividend, then the unpaid portion is lost to the preferred stockholder no matter if the succeeding year would show that the earnings of the corporation were very large.

The mere fact that the word "preferred" is given in the scrip does not necessarily imply that the stock is preferred as to dividends. If there is no explanation as to the manner in which the preference lies, it is necessary to consult the charter and by-laws of the corporation in order to make sure of the exact nature of the preference. This is a fact that is very largely overlooked in the examination of the stocks of corporations.

Stocks may be preferred as to assets as well as to dividends, or to both. Furthermore it is possible for preferred stock to get only a fixed dividend, the common stock to get only a fixed dividend, and the remainder of the surplus to be divided equally between the common and the preferred stock. The law contemplates such an arrangement. Unless there is an express provision to the contrary, in the charter or by-laws, some preferred stocks may get a fixed dividend, the common stock a fixed dividend, and then all of the remainder of the earnings to go to the preferred stock. This is a very unusual arrangement as it gives the preferred stockholders a very great advantage over the common stockholders.

Preferred stock had its origin in railroad reorganizations. In such reorganizations, after receiverships, it is necessary to



cut down the claims of the various bond issues in order to put the recognized corporation in a reasonably safe condition. The interest on the first mortgage bonds are usually scaled, some of the junior issues are perhaps turned into income bonds, and some of the inferior bonds may be issued as preferred stock.

Preferred stock serve four useful purposes. It may be a convenient means of separating a company's stock into voting classes. In doing this it frequently happens that the preferred stockholders have no vote at all, in other cases it elects a limited number of directors. In most cases the common stock elects the majority of the board of directors. Then again preferred stock is often very useful in forming industrial consolidations. In making such consolidations the assets are capitalized far beyond their normal value. Ordinarily the common stock represents future prospects, while the value of the plant and the assets are represented by bonds and preferred stock. The bond holders owning junior issues are quite willing to exchange their bonds for preferred stock with fixed dividends.

It has been found that preferred stock facilitates the incorporation of a business that was formerly conducted as a partnership. It is the theory of a partnership that each partner has as much to say in regards to the affairs of the business as any other partner. In most partnerships, however, there is a senior partner who usually controls, although in law he is on an equal footing with the other partners. In organizing a corporation they may desire to preserve a similar arrangement. This may be done by issuing non-voting common stock to each partner in proportion to his interest in the business. On the other hand, preferred stock may be issued to the senior partner having the voting power preferred. This would give him supervision over the business while the common stockholders would share proportionately in the profits.

Preferred stock is sometimes thought to be a better investment than common stock, and it will attract a more conservative class of investors. In point of security, however, preferred stock ranks between the lower grades of bonds and the common stock. Sometimes a corporation sets aside a certain class of stock with voting privileges only. Such stocks are called "voting stocks." Other stocks are then called "non-voting." Happily this is rarely done in our modern corporations.

Formerly it was the universal custom to give to each shareholder one vote for each share which he held. This custom is still general so far as the common stock is concerned. The chief objection, however, to this custom is that it puts the control of the corporation absolutely in the hands of the owners of the majority of the stock. The majority stockholders then proceed to elect not only a majority of the board of directors, but *all* of the board of directors who in turn put their friends in office. This leaves the minority stockholder without any representation on the board of directors. Unfortunately this is a serious condition which exists to-day among American corporations. In England they have a process of voting which in a measure overcomes this evil. A man having ten shares or less may be allowed one vote; if he has twenty shares, the additional ten would be allowed one-half a vote; and another additional forty shares would be allowed one-fourth of a vote, and so on.

By this method of voting a small clique finds it difficult to control the management of the corporation without owning nearly all of the capital stock. In America the ease with which stock can be transferred to employes and members of the family, who own the shares, makes the principle ineffective.

Recently there has come into vogue another method of giving the minority a voice in the management of the corporation which is called "cumulative voting." "By this method each share has as many votes in electing directors as the number of di-

rectors to be chosen." These votes may be scattered among the different candidates or they may be concentrated on one candidate. The effect of this method is to divide votes in such a way that the large holders of stock in order to elect a majority of the directors must concentrate their votes upon their chosen candidates, while the minority by concentrating their votes may elect a certain number of the directors. For instance suppose that there were five directors to be elected, in that case each shareholder would have five votes. If the owners of the majority of stock concentrated their votes on three candidates they would be able to elect them, but if they dissipated their votes upon four candidates the owners of a minority of the stock would be able to defeat the majority. By this method the minority always has a representation on the board of directors. The constitution of the state of Pennsylvania contains a clause requiring that all corporations organized under its laws shall conduct their election by the cumulative voting method. There can be no doubt but what this method should be incorporated in the statutes of the various states.

There is still another method of protecting the interests of the minority stockholders, and also of the creditors of the corporation. This is done through a voting trust agreement. This agreement usually gives the majority of the stock of the corporation into the hands of trustees who are authorized to vote it under certain limitations which are prescribed in the agreement. The trustees usually issue in return for the stock deposited by the shareholder voting trust certificates which certify in effect that the stock is held by the trustees, and also gives the shareholder the right to transfer and sell his stock in the same manner as his original certificates of stock. As the directors are usually men of high standing, the minority stockholders may feel that no radical change in the management will take place unless they are consulted.

Voting trust agreements have not been popular owing to the fact that they restrict the freedom of the majority stockholders. This agreement is usually resorted to when the corporation is in financial difficulties, or, when it desires to reserve to certain individuals, the right of the management of the corporation.

It is a well known common law rule that a corporation must receive the par value of the stock when it is issued. This rule has been incorporated into the statutes of most of the states. There has been many devices to avoid this rule, some of which are unworthy of consideration.

While it is true that the rules governing corporations are largely statutory, there is a general principle which is quite universal. If stock is taken from a corporation as full paid, when in fact the shareholders have not paid its full value, or the equivalent of the same, the creditors of a corporation may commence an action against the favored shareholders and compel them to pay the deficiency. This right, however, can be used only in case the company becomes solvent. It does not, however, lapse on account of a long period of solvency. The creditors of a corporation have compelled the shareholders to make up the full par value of the stock after an elapse of seventeen years. The writer examined an insurance company where part of the stock had been issued, but only a small proportion of the par value had been paid up in cash. The official's attention was called to this defect, and the par value was collected from the delinquent shareholders. Purchasers of stock should be very careful of accepting any issue of stock for less than its par value as it may in the future impose a heavy liability upon the purchaser. It should also be borne in mind that the directors of a corporation which issues stock without its par value being paid in full, are liable personally for the deficiency. This applies with a special force where the stock is issued for property which is less than the par value. Some states go so far as to declare

that the directors are guilty of a crime punishable by a fine and imprisonment.

Stocks may be paid for in cash, in labor done or services rendered, in dividends, and in property. Some of the states make exceptions to these various methods of payment. It is important that, if any other means of payment than cash are given, it should be well within the par value.

What has been said about the payment of the full par value relates particularly to the original issues. Stocks may be sold for an amount greatly in excess of its par value, or at a discount considerably below its par value. The only feature in which the shareholder will be particularly interested relates to the original issue.

From the preceding it will be seen that stocks of corporations are not a tangible asset at all, and may in some cases become a liability. This is especially true of bank stock of national banks, where the shareholders are liable in case of insolvency to an amount equal to the par value of their stock. In order for the average investor to deal successfully in stocks, it would be necessary for him to familiarize himself with the charters, by-laws, and methods of transacting business of a great many individual corporations. Besides the method of using dummy directors, the concealment of assets and their difficulty of appraisal, and the consequent evils from watered stock has made the field of inquiry very difficult to conquer. It is doubtful if the average official of an insurance company can acquire a full knowledge of this form of investment within the limited scope of his time. In addition it is one of the most unsatisfactory securities which belong to the holdings of insurance companies.

The examiner of a fire insurance company with the above explanation of some of the most salient points in connection with stock transactions, should look up very carefully every issue of stock presented for his investigation. It is not sufficient that

he be able to determine from the financial reviews the market value of these securities. The possibility of their ready transferability for cash is a very important part of the investigation.

We doubt the advisability of insurance departments allowing this form of security as an admitted asset, and we believe that it would be better for all concerned if the statutes of the different states prohibited their purchase by insurance companies. It would be well if the officials of fire insurance companies were required to observe similar statutes to those relating to life insurance companies. Stock speculation should be reserved for the expert, or stock gambler and not for the uninitiated and ignorant investor.

It frequently happens that the stock expert has not sufficient funds to carry out his projects, and he turns to the innocent investors who usually suffer grave wrongs. Severe punishment for misrepresentation as well as easy voidability of such sales should be provided by statutes.

During the last fourth of a century the number of disappointed investors of stock has become very large, and either the statutes of the various states should make corporation investments safe and secure, or they should be limited to the venture-some investor and not to the holders of trust funds and the capital and savings of insurance companies.

### *Corporation Bonds*

One of the most important facts to be established in connection with the examination of bonds is to determine whether they are *investment* bonds or *speculative* bonds. In a technical sense, the former term is applied to all of those bonds, which are first liens against property that, as far as the human mind can foresee, will not depreciate in value. In a more extended sense they are representative of that class of securities which are, at all times, amply secured, and their final payment is certain.

This class of bonds includes all issues of the United States government; senior issues of all large cities, and most issues of municipalities, states, counties, townships, and school districts where the legal status has been fully established and acknowledged; first mortgage bonds of any of the standard steam railroads where the mortgage covers a considerable number of miles of trackage and terminals; first mortgage bonds of electric street, traction, and interurban lines where the franchise has an existence beyond the maturity of the bond and the factor of safety exceeds seventy-five per cent; and first mortgage bonds of certain industrial institutions which are practically monopolies in the necessities of our industrial life with assets sufficient to purchase new inventions and new machinery and all improvements which are likely to be made or controlled by the corporation.

The interest on investment bonds is low, rarely exceeding 4%, 4½% or 5%. Some bear interest as low as 3% or 3½%, but this low rate is unattractive and they are purchased only when safety is the first consideration and income is of secondary importance.

Speculative bonds belong to that class of securities in which the element of risk is prominent. There is a strong probability that the security will depreciate in value, due to an overissue for the amount of security offered, or more frequently there are other issues which take precedence over the one offered. If the terms *highly* speculative or *purely* speculative are applied to the issue, it is safe to assume that the security is entirely inadequate.

If the bonds can be classified as midway between the investment class and the speculative class, they are then known as semi-speculative. This is the class that most insurance companies purchase and the one that bond houses are apt to recommend. They are almost always junior issues depending

upon other forms of security than real property and improvements. They may be a first mortgage on a small division of a standard railroad and a second, third, or even a fourth mortgage on the main line. They usually depend upon some form of collateral for their main security.

Speculative and semi-speculative bonds usually draw a fair rate of interest, from  $4\frac{1}{2}\%$  to  $7\%$ . Because of their interest earnings, they are very attractive to the purchaser.

In order that we may understand more fully the nature of the securities which we have mentioned, we will endeavor to determine their character, the manner in which they are issued and the usual terms employed in connection with their security.

Mortgages and mortgage bonds of corporations are long time obligations and should, by their very nature, be based upon permanent, or fixed assets and should never be issued in excess of the valuation of such assets.

This at once raises the question as to the method of determining the value of fixed assets. Most people are inclined to believe, without sufficient study of the question, that the value of fixed assets may be determined by their cost. A moment's reflection will show that this is not true. A street railway may cost a great deal of money and not be a paying investment, owing to adverse legislation, rapid deterioration, or sparseness of population. Another road, costing the same, may be very profitable, owing to a great many favorable elements, and consequently its assets would be worth many times the value of the former road. Evidently, cost of construction has but little to do with the value of such assets.

Some believe that the value of assets may be determined by the cost of duplicating them. For instance, some claim that the value of a water power plant might be determined by the cost of reproducing it. This view is equally as fallacious as the first. A plant might cost a sum far in excess of a valua-



tion which would be on a paying basis, and the assets would drop in price correspondingly. Therefore, cost of reproduction does not determine the value of fixed assets.

If cost of construction or cost of reproduction does not determine the value of permanent assets, what does? The above illustrations show that, in ordinary business ventures, it is the earning power. This does not mean present earning power altogether, but future profits. Will the business pay a fair rate of interest on the money invested and will such investment be permanent and the profits certain? These are the cardinal principles that determine the value of fixed assets.

Fixed assets comprehend land, buildings, and machinery. They include everything not intended for sale but for use. Floating assets consist of raw materials, tools, finished goods on hand, and any other article designed for sale on which a profit may accrue to the corporation. They are not determined by earning power but by cost of production. There is a striking difference between floating and fixed assets which should be constantly borne in mind. Railway equipments are fixed assets while cars at a Westinghouse plant would be a floating asset.

It is an invariable rule that a corporation should never issue a mortgage or a mortgage bond in excess of its fixed assets, and the amount of its income available for fixed charges. The amount and stability of the income of a corporation is the measure of its paying power and determines the value of its fixed assets on which bonds may be issued.

When large sums of money are to be raised, it is customary to offer mortgage bonds in convenient denominations to the public. As the fixed assets are practically indivisible it is impossible to give a mortgage with each bond. By a simple device the difficulty is overcome. A mortgage is issued to some one individual, concern, trust company, or banking house as

trustee for all the bondholders. The mortgage is now called a *trust deed*, or *deed of trust*.

Each bond is a promise to pay and it usually states the nature of the security, the amount of the issue, the indenture with the trustee, the name of the trustee, date of payment, interest date, and, if coupon, the transferability of the coupon. Bonds are issued under corporate seal and are far more formal than a note.

The deed of trust, contrary to what most people believe, is the essential instrument. Usually it is a very long instrument as it must define very exactly the rights and obligations of the three parties to the contract—the corporation, the bondholders, and the trustees; the mortgaged property must be described exactly and in detail so that it will not conflict with any other mortgage, or obligation. A deed of trust may be divided into the following parts:

1. Date and names of parties to the indenture.
2. Preamble which includes the legal status of the corporation; state in which incorporated; amount of capital stock and bonds; amount and kind of property owned; authority of stockholders and directors for the issue; specific purpose of the issue; full text of a bond; and the interest coupon if a coupon bond.
3. The granting clause transfers the property to a trustee; detailed description of the property covered by the mortgage; duties of the trustees; statement that property is granted in trust; certificates of the bond of the trustee; and covenant to pay the interest and principal at the time specified.
4. Payment of taxes, assessments and any other charges so that the property will be free from any other lien; keep property insured; complete control of property and enjoyment of profits until default in principal or interest.

5. Default and foreclosure of mortgage; default defined; period of grace; percentage of bondholders at whose request the trustees shall take active steps, usually at 20 per cent to 25 per cent; the percentage of bondholders who must request foreclosure and sale in order to authorize the trustee to proceed, usually this is fixed at a majority; course of action of the trustee in case of foreclosure and sale; and the proceedings in case of a receivership.
6. Responsibilities, liabilities, and compensation of trustee; his resignation or removal upon request of the bondholders; and the appointment of his successor.
7. Signature and seal of the corporation and of the trustees through their proper officers with final attestations of the seal.

Mortgage deeds of trust are classified as closed, open-end, and limited open-end. A closed mortgage covers a limited amount of bonds, all issued at the same time, and absolutely forbids any additional bonds secured by the same mortgage. The open-end mortgage authorizes an unlimited amount of bonds, some issued at once, and some under certain restrictions, in the future. This latter form is issued in railroad deeds of trust. The limited open-end mortgage names a maximum amount to be based on the mortgage, part of which is to be issued at once; the rest may be sold under restrictions as to time, a certain amount each year. Sometimes there are other restrictions such as permission of the syndicate who bought the first issue, and that the interest on outstanding bonds be paid before any new bonds be sold.

There are certain terms used in connection with bonds which describe in a limited way the nature of the securities covered by the deed of trust. These may be classified as follows:

- |  |                             |
|--|-----------------------------|
| 1. First mortgage                        | 6. Collateral trust         |
| 2. Second mortgage, third mortgage, etc. | 7. Car or equipment         |
| 3. Special mortgage                      | 8. Debenture                |
| (a) Terminal                             | 9. Income                   |
| (b) Divisional                           | 10. Participating           |
| (c) Land-Grant                           | 11. Profit-sharing          |
| 4. General mortgage                      | 12. Joint                   |
| 5. Sinking fund                          | 13. Receiver's certificates |

There are certain other terms which designate the purposes for which the issue is to be made, such as

- |                    |                  |
|--------------------|------------------|
| 14. Unifying       | 18. Improvement  |
| 15. Refunding      | 19. Extension    |
| 16. Construction   | 20. Adjustment   |
| 17. Purchase-money | 21. Consolidated |

The manner in which the interest is to be paid is also told by certain terms used in connection with a description of the mortgage, such as

- |                |                                |
|----------------|--------------------------------|
| 22. Coupon     | 24. Registered as to principal |
| 23. Registered |                                |

The manner in which the issue is to be redeemed is shown by the following terms:

- |                |                 |
|----------------|-----------------|
| 28. Gold       | 30. Serial      |
| 29. Redeemable | 31. Convertible |

Any bond which is a first claim on the earnings and assets of a corporation is a first mortgage bond. A first mortgage bond out-ranks those of any other inferior issue. It is prior to a second or third mortgage bond and its claim must be satisfied before any other bond is paid. In the case of railroads, it is

said to lie close to the rails, and, ordinarily, if the issue is not too great for the amount of the fixed assets and earnings, its payment is quite secure. They are the most desirable type of bonds. The investment law of Wisconsin, which may be taken as being typical of the laws of other states declares that an insurance corporation may invest its capital and surplus:—"In the *first* mortgage bond of any railroad or other public service corporation of any state or territory of the United States, or of the District of Columbia, or of any province of the Dominion of Canada."

Take the bond schedules found in the annual statements of insurance companies and determine how many bonds can qualify under the above provision. A strict construction of the above section would exclude a large number of bonds which are supposed by the officials to be true first mortgage bonds.

Not all bonds having the word "first" in its title are genuine first mortgage bonds. Some are first mortgage on a small part of a branch line, and all the rest a second or possibly a third mortgage on the remainder. First terminal or divisional bonds are really first mortgage liens, but on terminal property only. This is equally true of first mortgage bonds of holding companies, which have for their security the collateral of subsidiary corporations. Various names are given to these issues, such as "first and refunding", "first general", "first and unifying", and "first and consolidated". Remember that all of these issues are junior issues and are much less valuable than the direct bonds of the subsidiary corporations. The words "unifying", "consolidated", and "refunding" signify that the underlying bonds will be retired as they fall due with the proceeds of the new issue.

The general mortgage bond is a lien against the whole system. It may be a first mortgage on certain parts of a line and a second or a third mortgage on other parts. The first lien

bonds are on the branches of the main system, and, when the parts are consolidated into a single system, a mortgage is spread over the whole system. These issues should be classified as second mortgage bonds at least. This does not convey the idea that these bonds are not good. Some general mortgage bonds are well secured, but they do not comply with the statutes of the states which require first mortgage bonds; as the intent of the statutes, no doubt, means that this class of bonds should be *bona fide* first mortgage liens close to the rails.

Collateral trust bonds are a modified form of the mortgage bond which has lately come into wide use in obtaining funds from the public. The word "collateral" used in its title correctly describes its true nature, because securities of other corporations, owned by the bond-issuing company, are made the basis of the issue. Its security is nothing more nor less than stocks and bonds of subsidiary corporations. In some cases it is only the former, in others the latter, while a combination of both has become quite common. The securities are covered by a deed of trust just the same as real property, and they are then called collateral trust bonds. In case of default, the bondholder can get only the bonds or stock covered by the deed or trust and he is a long way from getting his money which he invested. In the case of stock, the bondholder simply becomes a stockholder in a subsidiary corporation. All such bonds should be treated as junior issues by several degrees to all underlying bonds of the original corporation. It is frequently argued that the collateral have a sure income consequently the interest on the bonds will be paid with great regularity, and further that good commercial paper is more readily salable than real property. This may be true of certain kinds of commercial paper, but it is not always true of the collateral covered by deeds of trust. Then again nothing should becloud the real issue that these bonds are not liens against any tangible

real estate, but chattel mortgages which must take the course of the collateral back of the issue. These bonds do not form a proper investment for insurance companies and they should be scanned with great care by the investor.

Equipment bonds have been quite a popular form of investment for insurance companies. These bonds are largely confined to issues of railroad corporations. The equipment used as security for these bond issues does not belong to the railroad at all. The manufacturers of the equipment turn it over to a subsidiary company which in turn leases it to the railroads for a term of ten or more years. This lease forms the basis of the security for the bond issue which is transferred to the trustee of the bondholders. The railroad pays the trustee the purchase price of the equipment usually in installments, together with the interest on the unpaid installments. When the payment is complete, the lease is cancelled and the title to the equipment passes to the railroad company.

In order to pay the manufacturer, bonds are sold for about 80 per cent or 90 per cent of the cash value of the equipment by the subsidiary company. The bonds are payable in serial form so that as fast as the money is received from the railroad company it is devoted to their redemption. Suppose that the railroad company should fail to keep the terms of the lease, what real tangible security have the bondholders? Certainly they could get the lease of the subsidiary corporation, but that is a long way from the money loaned. The lease does not give them ownership of the equipment. It only gives them the right to commence legal action against the railroad, which may be long drawn out costly court proceedings. When the above facts are considered, and the rapid deterioration of railway equipment studied, one cannot but arrive at the conclusion that equipment bonds are not proper investments for an insurance company, even though they may, by a broad interpreta-

tion of our insurance laws, come within the meaning of a first mortgage bond. All equipment bonds, including "first equipments", should be considered a junior issue by many degrees from first mortgage bonds close to the rails. They are but little else than chattel mortgages.

Sometimes classed with equipment bonds of American railroads are the *five years equipment notes* of Canadian railroads. They differ from the true equipment bonds by being a lien against debenture stock. They are open to the same serious objection, as a proper form of investment for insurance companies.

A debenture bond is not a lien upon any specific property. It is nothing more nor less than an unsecured promissory note running for a number of years. Being unsecured a debenture bond, in case of default, or insolvency, is legally on the same level as the general floating indebtedness of insolvent corporations.

Debenture bonds are widely used in England as the English investor realizes, that, after all, the income of a corporation constitutes its real paying power. If all bonds had been simple debenture bonds so that all would have been on the same level, there can be no doubt but what they would have been as good security as the varied forms which we have now; but under our present system in which every part of a line is mortgaged, debenture bonds are highly speculative securities. The most successful issues of debenture bonds ever made in this country were brought about by the New England railroads, notably the New York, New Haven & Hartford Railroad Company and the Boston & Maine Railroad Company. These were issued in the form of corporate notes. Debenture bonds do not come under the investment laws for insurance companies, and they should be carried as assets not admitted.



The true nature of income bonds is very frequently misunderstood. As the name implies, the payment of interest charges can only be demanded when there is sufficient income to cover fixed charges of all prior liens and in addition enough earned to pay the interest charges on the income bonds. If the interest is not earned it need not be paid. This makes the interest payment on these bonds so uncertain that they belong to the doubtful class of securities. In most cases, however, the principal is secured by a mortgage. If it is not secured, the bonds are nothing more nor less than preferred stock without voting power. On account of the great liability of suits arising out of dissatisfaction in the accounting of the earnings of the corporation and the liability to default in interest, these bonds are very unsatisfactory securities for insurance companies. They should not form a part of their admitted assets.

Participating bonds get a fixed rate of interest and in addition share in the profits of the underlying securities. They are usually collateral trust bonds and are not *bona fide* first mortgage bonds.

Profit sharing bonds entitle the bondholder to get back his principal with agreed interest, and also a share in the increase of the underlying securities. They can be classed with participating bonds.

Joint bonds are direct obligations of two or more corporations which join in issuing them. These may be true first mortgage bonds, but usually they are not.

Receivers certificates are considered as better securities than first mortgage bonds, as they represent money expended by receivers of insolvent corporations under the direction of the court.

Construction, improvement, and extension bonds show that the funds are to be expended in some kind of development.

Purchase-money bonds are sold before the property on which they are based is actually bought. The funds secured by the sale of the bonds are turned over to a trustee to be held until the property is purchased; the funds are paid out by the trustee and he receives in return a first mortgage on the property

Convertible bonds are a type of bonds which may be changed or converted into some other kind of security, usually into stock. This privilege of conversion may belong to any kind of a bond, mortgage debenture, collateral trust, or income. The usual arrangement allows the bond to be exchanged for preferred stock at a prescribed rate of exchange and within a certain period. This class of bonds should be studied carefully to see if the conversion period has not passed. This feature gives it a speculative value owing to the vacillating character of the optional security.

A registered bond is issued to an individual or corporation direct in the same manner as stock, and ownership cannot be transferred only on the books of the company. Interest is paid by check which is sent to the registered owners. If the bonds are lost or stolen it cannot be sold except by forgery of the signature of the owner in which case the transfer would be illegal. Because of this fact they are very safe.

Coupon bonds are usually payable to the *bearer* and interest payments are represented by coupons attached to the bond. When the interest date arrives, the coupons are detached from the bond and deposited in a bank just as a check of a corporation. Coupons are in fact nothing but post-dated checks. Coupon bonds may be registered as to principal but the interest is always made payable to bearer. If a coupon bond is lost or stolen and is once sold to an innocent third person for value, the original owner must stand the loss.

Gold bonds are made payable in gold. If there are no such provisions it is understood that legal tender will be accepted.

Redeemable bonds are those which may be redeemed at the option of the corporation before the date of maturity.

All forms of corporation bonds should be studied with great care. The examiner will show his true worth by being able to sort out the worthy from the unworthy in bond investments. A close examination of this form of investment will be an education to most officials of insurance companies, and a warning against poor investments in the future.

### *Municipal Bonds*

Municipal bonds are evidences of indebtedness of a political subdivision known as a city, village, town, county, school district, or drainage district. The bonded indebtedness of the municipal districts of the United States far exceed the national debt. They are the favorite securities of investors of all kinds especially insurance companies, banks, and trust companies.

Municipal bonds differ but little from corporation bonds in being simple promises to pay based on the faith and credit of the political subdivision. As to the security of municipal bonds, there is everything to commend them. They are a tax lien upon all the property situated within the municipal subdivision, which could be sold under a tax sale in case of non-payment. This is the inherent element of strength in these bonds. It is the imperative duty of the municipality to meet both principal and interest, which becomes a prior claim. Then again, there is not much danger of an over-issue. The constitutional debt limit prevents this and serves as a check to the officials of the municipality and the bondholder as well. The attitude of

the courts on repudiation is all toward safety to the innocent investor. They will compel a tax levy for valid bonds. Judge Dillon, who is one of the most noted authorities on municipal securities, has been quoted as saying: "The Supreme Court of the United States has upheld the right of the holders of municipal securities with a strong hand and has set a face of flint against repudiation. Even when repudiation is made on legal grounds, it may be found by said court to have been the result of manipulations, which have been deceitful and fraudulent. Further, the value of such securities is largely due to the court's adjudication in respect thereto, and the Supreme Court now warns officials of all municipalities against such manipulation, which is no fault of the public, that it will stand firmly by the decrees that it has so frequently established."

This type of bonds is acceptable to the United States Government as security for issues of currency of national banks.

In testing the desirability of municipal securities, there are several considerations which should be carefully studied. They may be summarized briefly as follows:

1. Avoid a town or village of one industry; one that has been newly settled, or one that is the direct result of a boom. Give preference to old settled communities in the north, northwest, or east over the south or southwest.
2. Avoid mining communities and districts where the commercial interests seem temporary in their nature. Agricultural and manufacturing communities with ample transportation are best.
3. There is such a thing as a moral character in a city or village quite as much as in an individual. The record of the government is important; incapable, corrupt official, wide open towns, poor conditions of homes,

little public improvements, poor sewerage with consequent ill health, low sense of morality, all are indexes of a poor community in which to make investments. Give preference to progressive communities, dry towns, church going people, good buildings, good systems of transportation, and first class streets. All these indicate the moral fiber of the population.

4. Give preference to communities having a low per capita tax. Some large cities do not offer as good security as smaller communities. Determine if the bonds are tax exempt.
5. Give preference to those communities that have a low total indebtedness to assessed valuation. Determine the tax rate, the personal tax rate, the tax limit, and the increase in real and personal property for a series of years. No city however prominent and wealthy is inexhaustible in its tax resources. It is a fact that the credit of a city declines as its tax rate rises, and a deterioration of a city's credit might compel a high rate of interest and increased taxation.
6. Be careful that the legal side of the bond issue has been passed upon by competent authority. Every formality of law should be complied with. If this has not been done do not purchase any of the issues. The authority for an issue of bonds resides in the law—in the constitution of the state. In some of our larger cities it rests upon their charters; in counties, school districts, or irrigation districts upon resolution of their governing boards. Small municipalities must authorize the issue by an election. In New York City, it must be passed upon by the common council and approved by one or more subsidiary boards.

7. Give preference to those municipalities other than cities and villages which have a large population. By common consent, the population should not be less than 100,000 persons.
8. Be sure to determine if the issue is a direct obligation of the whole municipality. Paving and street improvement bonds of some of our western communities, which are a lien against the abutting property only, are for this reason objectionable.

The investment law of Wisconsin for insurance companies is considered one of the very best on the subject of municipal bonds. It reads as follows:

"Except as otherwise provided by law, a domestic insurance corporation may invest its assets as follows:

- (b) In the lawfully authorized bonds or other evidences of indebtedness of any county, city, town, village, school district, or other municipal district within the United States or the Dominion of Canada, which shall be a direct obligation of the county, city, town, village, or district issuing the same; provided, that any such municipal district other than a county, city, town, village or school district shall have a population, according to the last national or state census preceding the date of such investment, of not less than one hundred thousand."

Municipal bonds, under certain conditions, form one of the very best forms of investments, but they have their elements of weakness and they should be studied quite as closely as corporation bonds.

### *Government Bonds*

The lawfully authorized bonds of the United States or of any state of the United States or of the Dominion of Canada or of any province thereof form the highest type of securities and are proper forms of investment for insurance companies.

The bonds of foreign governments at war, no matter how attractive they may be, are not proper securities for insurance companies. They have elements of weakness that place them among the speculative class. The insurance laws of Wisconsin forbid the purchase of such bonds. It is not necessary for investors of the funds of insurance companies to go beyond the limits of the United States and Canada to get sound investments at attractive rates of interest.

### *Limitation on the Amount*

It would be very unwise for the officials of an insurance company to invest all of its funds in one form of bonds; no one can tell with certainty what the future will bring forth. The unexpected may happen and what may have been considered a very good investment at one time may, in the course of a few years, be a speculative one. The Wisconsin law does not allow a domestic insurance corporation to invest more than ten per cent of its admitted assets in any one corporation. This law should become a part of the statutes of the different states.

### *Amortization and Accumulation*

Interest is calculated on the par value of the bond. Thus, 4 per cent interest means 4 per cent of the par value. If the par value is \$100, then the interest would be \$4.00; if \$1,000, then the interest would be \$40.00, etc. The rate showing the number of hundredths of the par value is called the nominal rate.

Bonds are frequently purchased and sold at other prices than par. This greatly modifies the amount of income received from the investment. If bonds are purchased above par, then the income is lessened; if below par, it is increased. This is due to the fact that only the par value is repaid at maturity, and, in the former case, the premium on the bonds is sacrificed, while in the latter, the owner not only gets the amount which he paid but also the difference between the purchase price and the par value. The rate undergoes adjustment just as the purchase price, or base, is above or below par. This adjusted rate is called the *effective* rate.

In the vocabulary of the broker, 6 per cent bonds can be purchased to yield 5 per cent on the investment, 4 per cent to net 5 per cent,  $4\frac{1}{2}$  per cent bond to pay 6 per cent, 3 per cent bond on a 4 per cent basis, etc. One expresses the nominal rate of interest, the other the effective rate.

If a bond be purchased above or below par, the primary elements involved in its valuation are (1) the par value payable after a certain length of time; (2) an annuity amounting to the interest on the par value for the same length of time, and a ratio of increase of  $(1 + i)$ .

Suppose we desire to value a \$1,000 bond bearing interest at 7 per cent payable semi-annually, due in 25 years, or 50 half years, so as to yield 6 per cent, semi-annually, on the investment. The present value of one dollar for fifty periods at 1.03 is .2281071 and on \$1,000.00, 228.11. The value of an annuity of \$70.00 per year, or \$35.00 per half year, for the same length of time is 25.72976 times \$35.00, or \$900.5417. Hence, the value of the bond would be \$228.11 plus \$900.54, or \$1,128.65. In other words, we would pay \$1,128.65 for a \$1,000.00 bond, due in 25 years, at 7 per cent semi-annually, in order to realize 6 per cent interest on our investment.



There is still a shorter method than the foregoing for solving this problem. The difference between the nominal and effective rates of interest make a difference of \$5.00 in the amount of interest received during each half year. This produces the premium on the bond. Now the amount of an annuity of one dollar for 50 periods at 6 per cent interest or 1.03 per period is as we have stated \$25.72976, and for \$5.00, \$128.6488. The value of the bonds is \$1000.00 plus \$128.65 or \$1,128.65. This latter method is the one commonly used for valuation of bonds.

If you will turn to your bond book and find 7 per cent on the upper margin and 50 periods, and on the left margin 6 per cent, and then cross over to the 7 per cent column, you will obtain very quickly the same result. This is the great use of the bond book. In fact, it is indispensable in the valuation of bonds. In the same way, we may find the value for 49 periods, 48 periods, 47 periods, 30 periods, 20 periods, 10 periods, etc., and any number to the commencement of the first period, which is always the par value of the bond.

The process of bringing a bond valued above par to par value is called amortization and the reverse operation accumulation.

Let us amortize a \$1,000.00 bond bearing interest at 4 per cent semi-annually, purchased on a 3 per cent basis, due in four years. The values are as follows:

8 period	4 years	-----	\$1,037.429
7	" 3½ "	-----	1,032.991
6	" 3 "	-----	1,028.485
5	" 2½ "	-----	1,023.913
4	" 2 "	-----	1,019.272
3	" 1½ "	-----	1,014.561
2	" 1 "	-----	1,009.779
1	" ½ "	-----	1,004.926
Beginning	0 "	-----	1,000.000

The amount which we would charge off each period in order to bring the bond to par would be the difference in value of the bond at the beginning and end of the period. This would be equally true for the year. In the first period it would be \$4.438 and for the year \$8.944.

If we reverse the problem, we would have one in accumulation. We would then be required to find the value of similar bonds bearing 3 per cent to yield 4 per cent. The value at the end of the eighth period would be \$963.372, seventh period, \$967.640, sixth period, \$971.992, etc. until finally we reached par value. The amount to be added each year would again be found by finding the difference between the value of the bond at the beginning and end of the year. At the end of the first year it would be \$8.62.

By the process of amortization and accumulation the correct book value of bonds may be determined.

### *The Reserve for Unearned Premium*

There are several methods employed for determining the factors used in the calculation of the unearned premium reserve. The one used by the writer serves its purpose quite well, although the one used by Mr. Moore, the author of the Mercantile Schedule, is, from a mathematical standpoint, better for explanations. However, the writer prefers his method for simplicity and he will, therefore, take the liberty of presenting it, as he has not seen it in print before.

A policy written at the beginning of the year, running for one year, would expire at the close of the year or midnight, December 31. If the same policy were written at the close of the year it would expire one year hence. Therefore, one year policies, written at various times during the year, would cover a period of two years, or twenty-four months. Hence, in order

to divide the premium of one year policies proportionately according to time, we would subdivide it into twenty-fourths. The first month would be one twenty-fourth, the third month, one-eighth; the sixth month, one-fourth; and the twelfth month or yearly basis, one-half, etc. to the end of the period. If one-half is earned at the end of the first year, the unearned would likewise be one-half. Therefore, the factor for the unearned premium covering the first year would be one-half.

In the same way two years policies really cover a period of four years, or forty-eight months, three year policies, six years or seventy-two months; four year policies, eight years or ninety-six months; and five year policies, ten years or one-hundred and twenty months.

If we give the explanation for finding the factors of the unearned premium for three year policies, it will do for all the other term policies. In this instance the division of the premium is seventy-seconds. At the end of the first year, twelve seventy-seconds would be earned, or one-sixth. Therefore, the unearned would be five-sixths. This is the unearned factor covering the first year. Reckoning from the beginning, the next twelve months will earn twenty-four seventy-seconds, or thirty-six seventy-seconds in all. This gives us the factor earned as one-half and the unearned as one-half. The next year would see sixty seventy-seconds earned and twelve seventy-seconds unearned, or one-sixth. Therefore, the unearned factors for three year policies on a yearly basis are five-sixths, one-half, and one-sixth. Draw a line and divide into months to correspond with the number of months covered and explain the division of time graphically. Notice that in the first year only one space is covered each month while in the second year two spaces are covered each month, and in the last year, only one space per month. Make the same graphical drawing for two year policies, four year policies, and five year policies.

According to the theory of limits a monthly set of factors approximate a more correct result than a yearly set of factors; a daily set than a monthly set, etc. It is quite common now to find the monthly or quarterly factors used in many companies.

The method employed by the New York Insurance Department has been described by Mr. F. C. Moore in the following language:

"The principle upon which the New York Insurance Department very properly requires that the unearned premium liability shall be computed on annual or term policies is one of equation of dates. An annual policy written on the first day of January would have only one day to run on the 31st of December, while one written on the 31st of December would have three to four days to run. The two would exactly equate each other, and the average earnings of the two would be six months, or one-half. A company, therefore, accepting business through each of the twelve months, for an equal amount each month, would, on its annual business have earned, at the close of the year, one-half of its premium receipts and a *pro rata* proportion of all term policies."

"For example, the earned proportion of a two year policy would be that proportion of the premium which the equated time bears to the full term, viz. six months to twenty-four, or one-fourth. Three-fourths, therefore, of a two year policy would be reserved as unearned at the close of the year in which it is written. In like manner, a three year policy would, in the year of its issue, earn one-sixth, or that proportion which six months bears to three years, or thirty-six months, and would have remaining unearned, at the close of the year, five-sixths of its premium. A four year policy, in like manner, would earn one-eighth and have seven-eighths unearned at the close of the year; and a five year policy would earn one-tenth and have nine-tenths unearned at the end of the year."

One of the most concise rules for determining the unearned premium liability of fire insurance companies may be stated in the following manner:

"Charge every company with a liability for unearned premium on all risks written for one year or less equal to one-half of the premiums written on the policies in force. For policies for longer terms, the unearned premium is calculated by one-half the premium for the current year and the full premium for the remaining years."

Suppose that the premium on a policy running five years was \$20.00 or \$4.00 per year; charging the policy with \$4.00 per year for four years would be \$16.00, and \$2.00 for the current year makes \$18.00. Now \$18.00 is 9-10 of \$20.00. Therefore, the unearned premium would be 9-10 of the original premium.

There is still left the assumption that, if all the policies of a company were written uniformly throughout the year, it could be assumed that all one year policies could be issued on July 1, or the mid-year. Making this assumption, on December 31, the policies would have run only six months or one-half a year. Therefore, the unearned factor would be one-half. Two year policies, during the first year, would on the average be in force six months and would have eighteen months still to run. Therefore, the unearned factor would be eighteen twenty-fourths or three-fourths. This same principle would apply to all the other term policies.

It has been argued that the unearned premium is a fund set aside for the payment of fire losses. That this argument will not hold true is shown by the fact that the more inadequate the premium the less the unearned premium. If it were designed for protection against excessive fire losses, the reverse ought to be the case.

Some believe that the unearned premium fund should be a reinsurance fund which should be large enough to induce some other company to carry out the contracts made with the policyholder. This again raises the question of the adequacy of rates with which the unearned premium has nothing to do. It cannot therefore be called a reinsurance reserve fund.

The true function of the unearned premium fund is to return to the policyholder, either on liquidation of the assets of the company, or on request from the insured, the pro rata share of the premium not earned by the lapse of time.

It is sometimes argued that a fire insurance company derives a very large trade profit in the form of interest from its unearned premium fund. While this undoubtedly is true, still there exists an exaggerated idea as to the amount of true trade profit coming from this source. In order to obtain the true base for making this computation it is necessary to deduct the money expended in obtaining this amount of net premiums. This would represent about 20 per cent to 25 per cent of the fund. In addition to this, the uncollected premiums, included in the assets, which draw no interest, should also be deducted. The remainder, which is merged in the cash assets, or its equivalent, would form a proper base for calculating the trade profit of the company.

Finally, the examiner should be familiar with every phase of the work relating to the unearned premium and the need of accumulating this reserve.

### *Losses*

To find the reserve for unpaid losses, and to test the adequacy of the loss payments is one of the important features of an examination of a fire insurance company. Primarily it requires a knowledge of insurance law as far as it relates to fire

insurance. Familiarity with court decisions on controversial points is a necessity. The field is so vast and the number of works on the subject so valuable that the author will content himself more with the equipment of the examiner and the sources of information, than to enter into a discussion of insurance law and the various cases which will come under his observation.

As a preparation for this work, every insurance examiner, who has not had the advantages of a course in a school of law, should take an extension course in some university or college. A valuable course is given by the extension department of the University of Wisconsin. It will form an indispensable introduction to the subject. While the course is not broad, the references are good and notes and suggestions of the extension faculty are very helpful. The cost of this course is so modest that no examiner without legal training can afford not to take it.

The following works contain the essential elements of fire insurance law:

- Richards, George—Richards on Insurance.
- Joyce, Joseph A.—Joyce on Insurance.
- Elliot, Charles B.—Elliot on Insurance.
- Cooley, Roger W.—Briefs on the Law of Insurance.
- Beach, Charles F. Jr.—Law of Insurance.
- May, Joseph W.—May on (non-Marine) Insurance.
- Biddle, Arthur F. Jr.—Law of Insurance.
- Porter, James B.—Porter Law of (non-Marine) Insurance.
- Cyclopedia of Law—Article on Fire Insurance.
- Hall, Thrasher—Hall on Fire Insurance.
- Bigelow, Harry—Insurance (Extension Course).
- Elliott on Contracts—Article on Fire Insurance.

A very careful study should be made of the standard fire insurance policy used in the states of North Carolina, Pennsylvania, and South Carolina. These express the most advanced

thought on the subject. In this connection, the standard form of policy used in the states of New York, Massachusetts, Connecticut, and Wisconsin should be analyzed with care, as these forms are most used in the other states.

### *Essentials of Claim Examinations*

In the examination of the claims of a fire insurance company, there are certain essential elements which an examiner must constantly have in mind in order to determine whether the insured has been fairly treated under the conditions of the standard fire insurance policy. These are the common things over which controversies arise. The deeper legal technicalities should be studied separately in connection with the claim, and reference should be made to one or more of the insurance works given in the preceding list. These essentials are as follows:

1. The policy must be in force at the time of the fire. An existing written policy may be renewed by a parole agreement of an authorized agent.
2. A contract of insurance is a personal contract and does not, unless expressly so provided, run with the property.
3. The underlying principle of every contract of insurance, affecting property, is that of indemnity. This means that the insurer, in the event of loss, should place the insured as nearly as possible, within the terms of the policy contract, in the same situation as before the loss, but not in a better one. The value of interest of the insured may be determined after the loss. It may be determined before the loss and inserted in the contract, and, in the absence of fraudulent over-valuation, the amount will be taken as conclusive.



4. Reinsurance is a contract of insurance by which the original insurer becomes himself the insured in respect to the same subject, upon the same risk, and under the same conditions as are expressed in the original policy. As the original contract is one of indemnity, the reinsurance may be for an equal or less amount than the original, but it cannot be for more. The reinsurance of a risk creates no contractual relations between the reinsurer and the original insured. The reinsurance is absolutely foreign to the first insured, with whom the reinsurer contracts no sort of obligation. For the insured to have a claim against the reinsurer, there should be an exchange of contracts and new contracts substituted for the old.
5. Insurance against loss by fire is not one for necessities for which an infant may be held. Such a contract is voidable at the option of the infant but it is otherwise binding on the company.
6. In fire insurance, the insurer upon paying to the insured the amount of loss on the property insured, is subrogated, to the same amount, against any other person to the insured's right of action against such other person. This arises out of the fact that a contract of insurance is a contract of indemnity. If the insured has no right of action none passed to the insurer.
7. A contract of fire insurance covers a loss occasioned by the carelessness or negligence of the insured, unless the negligence is so gross as to show an evil intent. The burning of the property by the insured while insane will not release the insurer in the absence of any provision in the policy to that effect. If the property is burned by a wrongdoer other than the insured, the insured cannot release the guilty party without the

consent of the insurer, without forfeiting the right of action upon the insurance contract. The mere fact that the property was burned by a near relative of the insured without the latter's knowledge or participation will not release the insurer.

8. A contract of insurance is complete when the terms have been agreed upon between the parties. The reciprocal rights and obligations of the parties date from that time, without reference to the execution and delivery of the policy, unless these elements are embraced within the terms agreed upon, or the statutes makes such delivery a condition precedent to the validity of the policy. Ordinarily the contract is not binding upon the company until delivered unless the facts are such as to entitle the party to recover upon an oral contract.
9. When a policy provides that it shall not be binding until countersigned by a certain agent, it is invalid without such signature, unless it be an oral contract.
10. The loss claimant, in order to recover under a fire insurance policy must have an insurable interest in the property destroyed. The owner of property, a mortgagee creditor, a lienor, a person having a binding contract to purchase, partners, joint tenants, tenants in common, shareholders in a corporation and a common carrier to whom are intrusted with goods of another, have insurable interests which may be insured.
11. The application for insurance is usually in writing and the applicant is required to sign it. It contains much specific information with reference to the risk. The application need not always be in writing, it may be oral.
12. The intentional withholding from the insurer facts which are material and prejudicial to the risk is called concealment. It is a recognized rule of law that "each

party to a contract of insurance must communicate to the other in good faith all facts within his knowledge which are, or believed by him to be, material to the risk and which the other has not the means of ascertaining and as to which no warranty is made."

13. The essential difference between a warranty and representation is that in the former it must be literally fulfilled, or there is no contract, the parties having stipulated that the subject of the warranty is material and closed all inquiries concerning it; while in the latter, if the representation prove to be untrue, if it is not material to the risk, the contract is not avoided. In other words a warranty must be true while a representation must be true only so far as the representation is material to the risk, and it is material when a knowledge of the truth would have induced the insurer to have refused the risk or have charged a higher rate of premium.
14. A waiver is the voluntary relinquishment of a known right. As a general rule, if the authority of the agent is general so that his acts are the acts of the company, he can waive a provision of the policy if it is of such a character that it could have been waived by the company. The insured may rely upon the representations of an agent who issues the policy and upon his assumed authority to waive provision within his apparent scope of authority, when there are no restrictions upon the agent's authority which are brought to his knowledge. But when the policy requires the written assent of the company indorsed on the policy, the company has the right and power to restrict the power and duties of its agents.
15. The essential things to be remembered in connection with the standard form of policy which affect the subject of

losses has been analyzed by a high legal authority as follows:

*Conditions Prescribed by the Policy*

The standard policy form fixes certain conditions which cannot be changed except as hereafter mentioned; namely:

1. That the loss or damage shall be paid in full according to actual cash value, if within the amount of the insurance, except that the company may repair or rebuild.

2. That payment must be made within sixty days after receipt of proofs of loss.

3. That fraud by the insured makes the policy void.

4. That the policy shall be void in case of violation of conditions against:

(a) Other insurance.

(b) Operating factory at night after ten o'clock.

(c) Ceasing operation more than ten days.

(d) Increase of hazard.

(e) Building or repairing more than fifteen days.

(f) Other than unconditional and sole ownership.

(g) Building on ground not owned in fee-simple.

(h) Chattel mortgage on personal property.

(i) Foreclosure proceedings.

(j) Change in interest, title or possession.

(k) Assignment of policy before a loss.

(l) Generating illuminating gas.

(m) Keeping gasoline or other volatile oils or explosives.

(n) Vacancy of building for ten days continuing to time of fire.

5. That the company is not liable where the property is damaged or destroyed by the government or by its failure to

maintain order; or by the neglect of the owner to protect it in case of fire.

6. That the policy covers loss or damage by lightning.

7. That the insurance ceases on the fall of a building except in a fire.

8. That certain property may not be insured or may only be insured as specifically mentioned, or only to the amount or proportion specified.

9. That representations by the insured are warranties.

10. That a renewal is void unless increase of hazard is disclosed.

11. That the policy may be cancelled by either party, subject to return of premium as provided.

12. That the rights of a mortgagee are subject to the conditions of the policy.

13. That the policy covers for five days in a new location after removal to protect from fire.

14. That the insured give immediate notice of loss; make proof of loss within sixty days; and, as required by this company, exhibit the property or remains thereof and submit to examination.

15. That the amount of loss may be determined by arbitration.

16. That there shall be no waiver by the company.

17. That the company is not liable beyond the proportion of the loss which the policy bears to the total insurance.

18. That the company is subrogated to any claim against any other person for neglect causing the fire."

In connection with the above analysis read pages 381 to 449 of Elliott on Contracts, Vol. V. This treats of matters after a loss and covers the subject fully. With these essentials the examiner should be in a position to pass upon losses and deter-

mine if the attitude of the company is fair and just toward the insured.

### *Non-Concurrent Losses*

In a large proportion of the policies issued by any fire insurance company, the maximum amount of insurance expressed in the policy is divided into several items. For instance, a policy may cover the building, a stock of merchandise and the furniture and fixtures of a store. In the case of factories and mills, the number of items may be quite numerous and very complicated as machinery designed for specific purposes are classed in a given item.

If there are several companies on a risk and all the policies attach to the same item by specific amounts, that is are concurrent, the apportionment of the loss among the companies is a simple problem of proportion. The standard fire insurance policy gives the manner in which the apportionment shall be made. The one used in North Carolina is the simplest and it states as follows:

“This company shall not be liable for a greater proportion of any loss or damage than the amount insured shall bear to the whole insurance covering the property, whether valid or not and whether collectible or not.”

The last part of the section simplifies the apportionment. The entire amount of insurance on the risk must be made the basis of the apportionment. It makes no difference whether the insurance is good or not nor whether collectible or not, the amount in force must be the base for apportionment purposes. There seems to be one exception to this rule. Companies in the hands of receivers are not included, because, under the common law, such action automatically cancels all outstanding policies.

In order to illustrate the working of the clause, suppose that a merchant insures his stock in two companies, A and B, as follows:

Company A, groceries_____	\$2,000
Company A, boots and shoes_____	3,000
Company A, dry goods_____	4,000
<hr/>	
Total _____	\$9,000
Company B, groceries_____	\$5,000
Company B, dry goods_____	6,000
<hr/>	
Total _____	\$11,000

Suppose that a fire damaged the stock as follows:

Groceries _____	\$2,000
Boots and shoes_____	1,000
Dry goods _____	5,000
<hr/>	
Total _____	\$8,000

An inventory of the stock just before the fire showed that the sound value of the stock was equal to the amount of insurance, namely, groceries \$7,000, boots and shoes \$3,000, and dry goods \$10,000, total \$20,000.

A's apportionment of loss and the amount which the company would pay would be as follows:

$$20,000 : 2,000 :: 8,000 : X$$

$$X = 800 \text{ Groceries}$$

$$20,000 : 3,000 :: 8,000 : X$$

$$X = 1,200 \text{ boots and shoes}$$

$$20,000 : 4,000 :: 8,000 : X$$

$$X = 1,500 \text{ dry goods.}$$

B's apportionment of the loss and the amount which it would pay would be as follows:

$$20,000 : 5,000 :: 8,000 : X$$

$$X = 2,000 \text{ groceries}$$

$$2,000 : 6,000 :: 8,000 : X$$

$$X = 2,400 \text{ dry goods.}$$

Each company would pay as

follows:	Co. A	Co. B
Groceries -----	800	2,000
Boots and shoes -----	1,200	0
Dry goods -----	1,600	2,400
	<hr/>	<hr/>
Total -----	3,600	4,400

Let us suppose that company B, instead of giving the specific amount on each item spread a blanket policy over the whole stock for the same amount namely, \$11,000. Company A gives the specific amount of insurance on each item, company B does not. The former is called specific insurance and the latter non-specific. Both policies are non-concurrent with regard to the other.

There are two steps in the solution of the problem. First, apportion the amount of the blanket policy among the different items according to the sound value of each item. Second, then apportion each item of loss to each company according to the preceding illustration. That is:

$$20,000 : 7,000 :: 11,000 : X$$

$$X = 3,850 \text{ B's insurance on groceries}$$

$$20,000 : 3,000 :: 11,000 : X$$

$$X = 1,650 \text{ B's insurance on boots and shoes}$$

$$20,000 : 10,000 :: 11,000 : X$$

$$X = 5,500 \text{ B's insurance on dry goods,}$$



Having the amount of insurance on each item by both companies, it is now easy to apportion the loss according to the first illustration.

This is a simple illustration of contribution or apportionment of losses between non-concurrent policies which may be expressed in the following language: "If one policy or policy item covers a broader range of property than another, and if the damage is wholly on the property both cover, the apportionment is in the ratio of their amounts."

If one company covers the items A and B and the other B and C then the first company pays the loss on A and the second on C and then both contribute to pay B in the proportion of their remainders.

If one company covers A, another B and the third A and B jointly then we have an illustration of compound non-concurrence. The amount which the third policy should contribute toward paying the losses of the other two varies with the circumstances. That method will be preferred by the courts that will give the insured the fullest indemnity, if all the methods will not agree.

The rule used quite extensively in the West is known as the Chicago rule. It reads as follows:

"The compound insurance contributes from its full amount with the specific, to pay the loss on the first item in the general form on which there is a loss. The remainder of the compound insurance, after deducting the amount of loss paid, contributes with the specific insurance on the next item in the general form on which there is a loss. This plan is followed until the whole loss is paid or the compound insurance is exhausted" (Daniel).

It may be said in general terms that if one apportionment does not fully indemnify the insured, then a second apportion-

ment is made, using the remainder of such item as a base for further contribution.

Far less intricate but of far greater importance is the apportionment of a loss among several companies, part of which have policies with coinsurance clauses and part have not.

Suppose that there are three companies on a loss as follows:

Company A insures 2,000 with 80 per cent coinsurance.

Company B insures 2,500 with 80 per cent coinsurance.

Company C insures 3,000 without coinsurance.

Suppose at the time of the fire the sound value of the property was \$10,000 and the loss was \$4,000.

If there had been no coinsurance clauses attached to the first two policies each company would pay according to the first illustration as follows:

Company A_____	\$1,066.67
Company B_____	1,333.33
Company C_____	1,600.00
	<hr/>
Total_____	\$4,000.00

Since the first two companies have 80 per cent coinsurance clauses attached to their policies, they will contribute in the following manner:

$$80 \text{ per cent of } 10,000 : 2,000 :: 4,000 : X$$

$$X = 1,000 \text{ Company A}$$

$$\text{In the same way } X = 1,250 \text{ Company B}$$

A loss statement may now be drawn up as follows:

Company A insures 2,000	loss 1,066.67	pays 1,000
Company B " 2,500	" 1,333.33	" 1,250
Company C " 3,000	" 1,600.00	" 1,600

The owner of the property contributed \$150.00 toward the loss on the first two policies.

In the examination of losses, adjustments involving problems similar to those given will be quite numerous. With the information before him in the loss files, he should test the apportionments to see that the insured is fully protected and the compensation correctly made. Further, he may be called upon by boards of arbitration or courts to give the correct apportionment of a loss, and he should be able to give a good account of himself.

## CHAPTER XI

AGENCY MANAGEMENT AND BUILDING  
MATERIALS

It has frequently been said that the agency force makes the company. This is quite true, but not the whole truth. We would be more nearly correct if we said that a strong management makes a strong conscientious agency force. A weak management produces indecision, inefficiency, and a spirit of "try-it-on" with the company. If every agent is clearly informed in regard to the lines which the company will carry, the nature of the risk which it will take, the rates which it will accept, the kinds of inspections required, the rendering of accounts and the payment of premiums, the keeping of the agency books, the nature and forms of the various riders to be used, the meaning of the general policy conditions and their legal significance, the method of making separate policy forms for special hazards, the method of rate-making,—to the end that the agent will see the need of an adequate rate and the reason for the charge,—and conduct a general campaign of education by diffusing pamphlets in regard to certain features of the work, the whole agency problem would become very much simplified, and the home office would earn the respect of its agency force and thereby get a better class of risks from its representatives. A company that once sets out to take doubtful risks to please an agent may regret their mistake in an en-

larged loss ratio. Firmness together with a spirit of real helpfulness will work wonders with an agency organization.

In this work the special agents, or field men, are very important factors. If they are selected with the right qualifications and if they receive proper instructions from the home office management, the agency system may become one of the most powerful forces for the upbuilding of a strong solvent company.

The agent should be given to understand that a long continued series of fire losses would mean the eventual loss of the agency. At the end of each year, he should be sent a statement showing the results of his stewardship. This should be simple, giving only the premiums, the losses, and the expenses of the agency. This will show him whether he is making any money for the company or not.

In this connection there are many strong agencies which prefer a part of their compensation in the form of a contingent commission. Wherever this can be brought about, it is undoubtedly an advantage to the company. However, the contingent commission should not be an additional commission to the regular commission rates of the company, but rather a part of it. The practice of some companies of considering a contingent commission as a sort of bonus to the agent is to be regretted.

If the company is careful in its underwriting methods, it will, after a few years, get the renewal of a select class of risks. Then the future of the company is quite secure so far as normal losses are concerned. The agent must be made to see that he is an important factor in the company's welfare, and that, when he is building up the company, he is in reality building up his own fortune.

Do not make unnecessary and needless changes in the methods of conducting the business, as that always confuses the

agent, arouses his antagonism, and frequently requires expenditures for educational work which may offset the small advantage gained. Know what to do at the beginning, and then pursue this course with firmness and dignity until a change of real importance is necessary.

Seek your agency force in thriving communities. Avoid placing agents at every cross-road, and in every large factory or store, in order to get the business. It is not business that you want, but real profitable risks. Even a small volume of business, however much this may be regretted, is more desirable than a large amount of business transacted at the danger point. Do not withdraw from a good community simply because you have been unfortunate and have had a series of bad losses; instead, investigate your local agency and bring about better inspection work and more careful selection of risks. The old adage frequently quoted applies with special force to this subject, "If you have lost a penny, you must go to the place where you lost it, if you expect to find it."

A good agency force is the result of education combined with a strong management. The company which has these forces will succeed.

Pay your losses promptly, and give your loss claimants the benefit of the doubt. Remember that the payment of losses is the real purpose for which premiums are collected. Such settlements always inspire confidence in the agency force, and even reaches out into the community. Fair, just settlements always mean more business and better risks.

### *Building Materials*

The most common building material is wood. It is, in fact, Nature's provision for man. He has used it from the earliest times. As soon as he began to see the need of a home, the forests were close at hand to supply his wants. No other ma-

terial met his needs so well, and even to-day it is one of the chief substances out of which he erects his dwelling.

Wood has many qualities which make it a very valuable building material. If kept from the atmosphere it is practically indestructible. Wood has been taken from the pyramids of Egypt over 3,000 years old, in a perfect state of preservation. The trunks of trees have been taken from excavations in the earth which could only have been placed there ages ago, how long no one can tell even approximately. To-day engineers take advantage of this property of wood and build the foundations of the skyscrapers of our large cities upon wooden piling, driven into the earth below the water level. While iron will corrode and waste away rapidly, wood will remain intact for centuries if immersed in water. If it is allowed alternately to be wet and dry, it decays with great rapidity. The main use of the paints which are used to decorate our buildings is to prevent this deterioration.

Wood is easy to work, and lends itself to ornamentation. Man has taken advantage of this property and has carved it into artistic designs which produce the great diversity that we see in our modern dwellings.

Wood on being planed takes a high polish, and for this reason it is especially suitable for interior finishing. It is beautifully grained, with its various designs, excelling in beauty the surface of any other building material.

Unlike iron or steel, wood does not expand or contract in any considerable degree in the presence of heat; that is, we may say technically, that the coefficient of expansion for wood is very small. Because of this property it is especially adapted for building purposes in temperate climates where the virile progressive races live. This property also prevents the destruction of the building when subjected to heat from exposure

fires. Plaster and stucco work have remained on the walls when the outside of the building has been charred and ruined.

Wood is not a good conductor of heat; therefore structures built of wood are not subjected to violent and rapid changes from outside temperatures. It can be kept clean and free from germ producing diseases, and it ranks first among different building materials for its healthfulness.

As a building material, however, it has one important drawback. When in a divided state it is highly combustible. If the timber can be kept in a massed condition, it becomes a slow-burning material. Throw a match on a thick floor of wood and it will go out, put the match in shavings and it will ignite a fire quickly and burn with considerable intensity. This property of wood has been used in building the New England textile mills, and such construction is now known as "mill" or "slow-burning" construction. The essential principles of this form of construction are as follows:

First, making fire stops of heavy plank between stories so that the spread of the fire upward may be retarded. This means, of course, doing away with all openings between floors, such as stairways, elevator shafts, and belt holes, and placing them in what is known as cut-off towers.

Second, all timbers and floorings are so arranged as to offer smooth surfaces, few corners, and the elimination of concealed spaces, such as we find between floor joist. Instead of the joist, use is made of heavy floor timbers from 8 to 12 feet apart, on which is placed grooved planking of from 3 to 4 inches thick, with a single or double top boarding. This form of construction admits of reaching the ceiling with a stream of water from a hose or from the heads of a sprinkler equipment.

Third, floors must be made so tight and heavy that they will prevent fire, smoke, and water from working through.



Factories built on the above principles have been known to resist fire from 40 to 80 hours before being consumed. It should be remembered in this connection that nearly all factories, in addition to the above mentioned plan of construction, are provided with other fire retardant apparatus. They are usually equipped with a sprinkler equipment, and if not, they are provided with a standpipe and hose, and in nearly all cases the fire buckets will be found on the roofs.

Frame dwellings should be built in such a way that the spaces between the studding will not form flues when the smoke and the heat has driven the air upward. If you have seen a dwelling on fire, you will no doubt have noticed how quickly the flames spread to the top of the building. This is due to the concealed spaces between the studding. These spaces should always be filled with brick or tile three or four feet above the sills. This will quite effectually cut off the flames from their upward course.

### *Stone*

All stone under the action of severe heat will crack, shell, or calcine, according to the nature of the material. Most stones will crumble at a heat of from 1,000 to 1,200 degrees, while the heat from a large fire often ranges from 1,800 to 2,400 degrees. Stones should never be used where there is danger from an exposure fire. Attempts have been made to classify stones according to their fire resisting qualities, but all such attempts have ended in failure. They are all unsafe in a conflagration. The laying of stone in a building has quite a perceptible effect upon its ability to withstand heat. If they are laid in flat panels, they will not crumble very quickly, and will only suffer a slight discoloration which may be removed by a sand blast.

Many of our most beautiful residences are made with brown stone fronts. Such forms of construction are allowed owing to the fact that they usually face the street. It was found, however, in the Baltimore and San Francisco conflagrations that such buildings suffered much more than the other forms of construction. The whole front of buildings were frequently found to have crumbled and fallen into the streets. It may be said that stone as a building material in a congested center of a city should never be used. In the outskirts of a city or in the suburban districts, the use of stones may be indulged in with safety.

### *Wrought Iron and Steel*

No material used in buildings is so treacherous as unprotected wrought iron or steel. Both will twist, warp, and expand under moderate heat, so as to cause a complete destruction of the building. Old firemen prefer frame buildings to a construction of unprotected wrought iron or steel beams, girders, columns, and trusses. Floor beams and girders should always be protected by terra cotta blocks or concrete floor coverings. If concrete is used, it should not be less than two inches thick. All columns supporting ceilings should be enveloped in brick, terra cotta, or cement, while trusses should be equally well protected.

### *Brick Work*

Brick is a common and valuable wall material, and is now made in a great variety of color and texture and all sorts of shapes for architectural needs. Brick work is lighter than stone work, and is vastly superior as a fire resistant material. Numerous fires have established the ability of brick to withstand heat. It is cheap and ranks next to wood as the most common material now used in modern buildings.

Brick is made by heating a clay mixture in kilns to a temperature of 2,000 degrees. It will not, therefore, be affected by a lower temperature. Fire brick is made to withstand temperatures of 2,200 degrees by being heated in furnaces containing molten iron. Sand-lime brick is much used in the West. It is made by molding, under high pressure, a mixture of sand with from 4 to 10 per cent of lime, and hardening by heating in steam at about 150 pounds pressure over night. This kind of brick is nearly white, but can be colored as desired. It is not as strong as clay brick, and its fire resisting qualities are not so satisfactory. In European countries nearly all the dwellings are built of brick, and the low loss ratio attributed to these countries is no doubt due to this fact.

Brick now enters into nearly all of the construction of our modern buildings. In some instances it is used on the outside of wooden frames, and such buildings are then said to be brick veneer. In other instances it is used in the interior of thick walls, and the outside is finished with granite or architectural terra cotta. It is one of our most valuable building materials.

### *Concrete*

Concrete is a mixture of cement, sand, and some coarser substance, such as cinders, broken stone, broken brick, gravel, or furnace slag. It has enormous resistance to compression, but it has low tensile strength. It pulls apart easily, and for this reason where it is used for foundation work, floors, columns, or where resistance against pulling is desired, it is reinforced by embedding in it steel wire laid longitudinal to the strain. By doing this any desired strength may be obtained, as the concrete attaches itself to the steel with great tenacity.

Extensive tests have been made in Germany and Great Britain, and also by the United States Geological Survey, which prove that the value of concrete depends much upon the aggre-

gate used. Gravel and broken rock were found to crumble and lose a large part of their coherence when heated to high temperature. Furnace slag and cinders gave the best results, but the latter was so difficult to obtain in the test made by the Geological Survey that its relative importance is still undetermined.

It has been proved by actual tests, as well as by passing through the San Francisco conflagration, that concrete makes one of the very best materials for fire-proofing steel as it is a good non-conductor of heat. Concrete floors are rarely injured below one and one-half inches from the surface. Concrete covering of two inches was found to be wholly adequate.

The damage done to concrete by fire is due to the fact that at about 800 or 900 degrees Fah. the heat will drive the water out of the cement which is held in chemical combination and it will lose its coherent properties. It is such a poor conductor, however, that it would take a long time to heat the whole mass of a floor through to such a temperature. Tests have been made with temperatures of 1,600 to 1,800 degrees Fah., and after four hours the temperature was only 500 degrees two inches below the surface.

Concrete can be made in many artistic designs by means of molds, and it is entering into our building construction as one of our chief materials. The large skyscraper of our modern cities, with their steel framework, would be almost impossible without using concrete as a fireproofing. Terra cotta, however, has become its close rival, and the relative merits of these two materials as protective features for steel frameworks are still in doubt.

Concrete blocks have been found not to be a valuable building material owing to the fact that they will split and spall when subjected to heat, like hollow tile.

*Terra Cotta*

A very good description of the use of terra cotta in modern building construction is found in a pamphlet written by Mr. Frederick C. Moore, of the Hartford Fire Insurance Company. He states as follows:

"Terra cotta is made from a moist mixture of clays, with ground terra cotta previously burned. This plastic mixture is welded into different shapes, such common forms as hollow tile being made by machinery, and the ornamental forms by hand in molds, and is finished by kiln burning, like bricks, at a temperature of 2,000 to 2,500 degrees Fah. These forms are generally hollow, although sometimes filled in the building with concrete or bricks. They are strong enough without filling if they are correctly shaped and have walls and webs thick enough.

The mixture mentioned above gives a dense, hard, brittle product; but by mixing about one-third coarse sawdust with the clays which burn out in the kiln and leave pores, a porous terra cotta is produced which can be cut and will receive nails. A semi-porous material can also be made in a similar manner. The hard terra cotta is stronger and cheaper, so that it is most used for loads, as in floors, although more porous forms can be made thick enough to be equally strong, and are sometimes used in floor arches. Porous terra cotta is especially resistive to fire and water, so that it is usually used as fireproofing for columns and beams where these qualities are of the greatest value.

Blocks for walls, floors, partitions, and fire proofing steel are common forms of terra cotta, but more and more it is being used in the form of highly colored and beautifully molded ornamental shapes for use on exterior walls, very often designed expressly for some particular building.

The hard material is subject in less degree to the same damage as ordinary stone; and all forms of terra cotta, because often held in place by being fastened to or between metal structural members, not protected enough to prevent marked expansion, are pulled apart or crushed by the action of the metals."

At the present time terra cotta is quite extensively used on the walls of kitchens, restaurants and other places, especially in bath rooms. It is but little else than earthenware, and it is a poor fire resistant material. A few years ago quite a large number of buildings were made by veneering the outside with white terra cotta. This gave the building a dazzling white appearance, but it was found to have all the elements of danger which are ordinarily attributed to stone material. Porous terra cotta, however, is very valuable in connection with fire proofing of steel, cast iron, and wrought iron frameworks.

### *Conclusion*

There are several places in the United States and in Europe where extensive fire tests are made of different building materials. As our knowledge of these subjects increases there can be no doubt but what the future will see a great many changes in the fire insurance business. Buildings in the future are going to be made out of material that will resist fire. While it is true that there is no material that is absolutely fire proof, still buildings can be constructed out of elements which are fire resisting, and with the growth of our knowledge of fire retardants, the fire waste is destined to decrease. Already wood is being subjected to a process which makes it apparently fire proof.\* In many of the buildings constructed in

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\* For more definite information on this important subject address a letter to the Forest Products Laboratory, in connection with the University of Wisconsin, Madison, Wis.

New York City some of the floors have been subjected to this treatment. Furniture in our homes, and fixtures in our office buildings and stores will soon be made fireproof without injuring the beautiful grain of the wood. However, the process at present is quite costly, amounting to \$35 to \$50 per thousand feet. If the process of rendering wood fireproof can be cheapened, lumber may again be used in our modern city buildings as one of our principal materials.

We have as yet only begun to study the question of construction. The future is bound to bring about great changes in our methods of building and the materials which we use. It is possible that this may have a very material effect upon the great underlying principles of fire insurance. It may simplify or make more complex the question of rating, and the statistics which we have been gathering at such a large expenditure of time and money may become worthless under the new system of construction.

# ACCOUNTING SYSTEM

FOR

## FIRE INSURANCE COMPANIES

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BY

EDWARD A. KETCHAM

Chief Examiner, Insurance Department of Wisconsin

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<i>Journal,</i>	<i>Trial Balance,</i>
<i>Cash Receipt Book,</i>	<i>Unearned Premium Register,</i>
<i>Cash Disbursement Book,</i>	<i>Mortgage Loan Register,</i>
<i>Return Premium Register,</i>	<i>Bond Register.</i>
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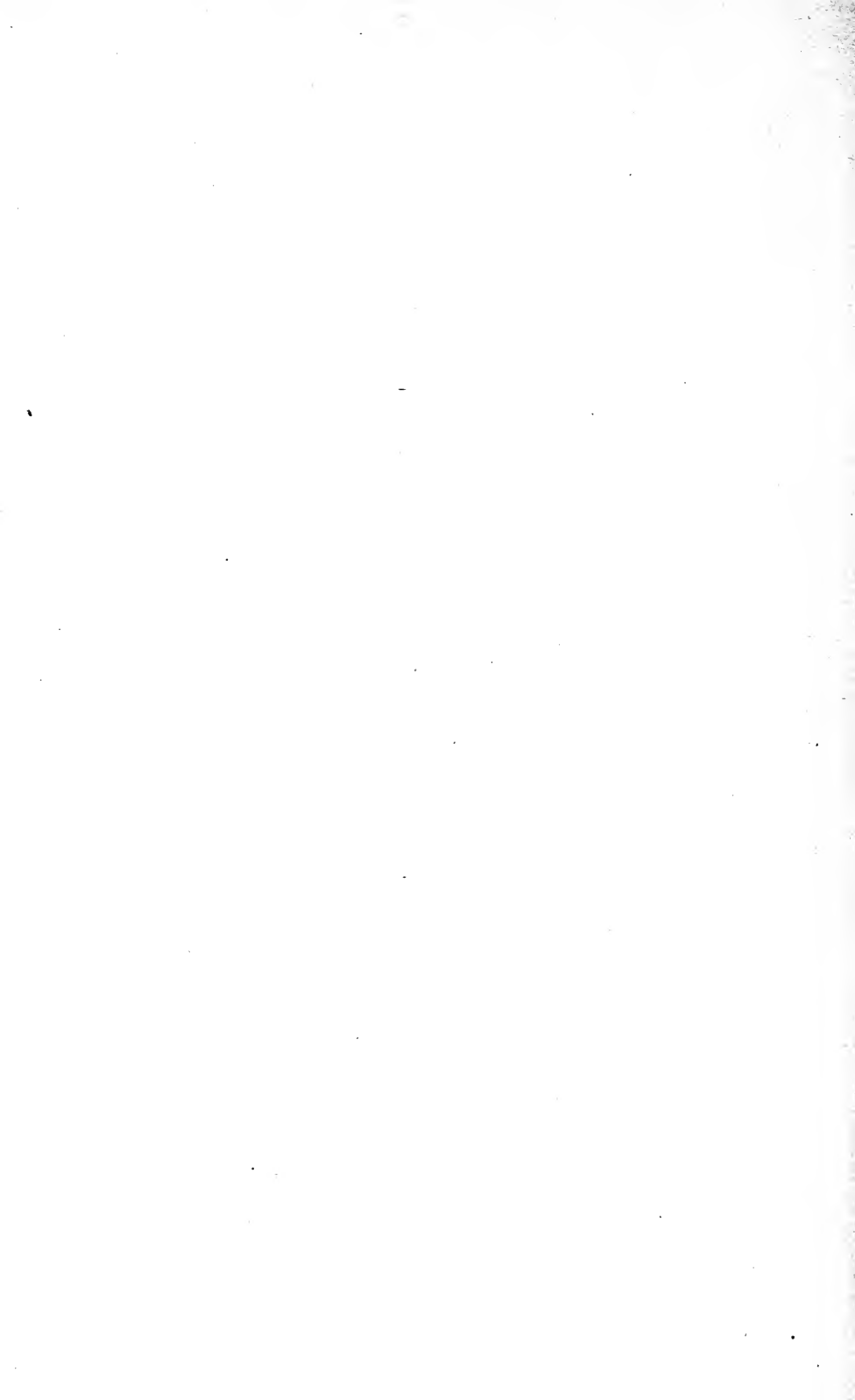
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